ELECTRICAL WORLD *News Issue*

AUGUST 20, 1949

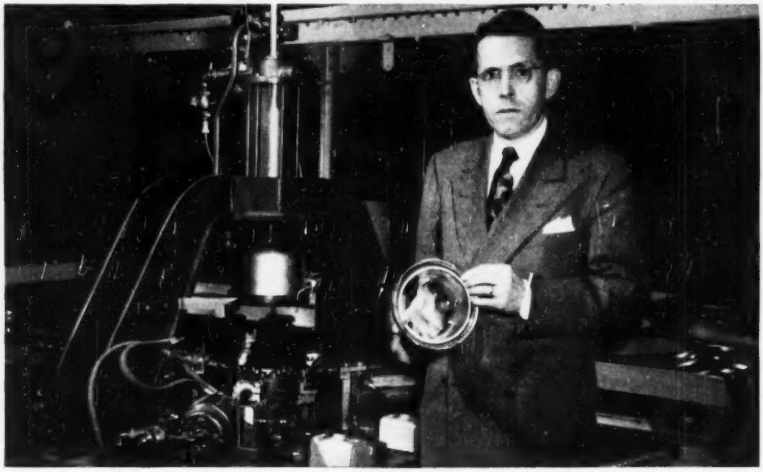
A McGRAW-HILL PUBLICATION

Charles H. Goddard, President-elect, Illuminating Engineering Society

— *how you are assured*

— *lower maintenance costs with*

— **new** *watthour meter, type I-50*



This 3-head welding machine is one of the many pieces of equipment designed especially for I-50 production. It automatically welds clips to cover rings. This is a small operation, but it's typical of many such operations that all contribute to the accuracy and uniformity of the I-50.

When we assure you of lower maintenance costs with the I-50 meter, we give you our personal *assurance. This comes directly from the people here who build I-50 meters.*

We're proud of the outstanding engineering design behind new features like the magnetic suspension of the rotating element. But we realize that these new features can only be as good as we make them.

So, we employ only specially trained personnel. We have provided them with the best and newest in manufacturing facilities. And, we have in operation a system of rigid quality control.

All this is backed by strong enthusiasm on the part of individual employees—a determination to make the best watthour meter General Electric has ever built.

L. P. Hannaway

Plant Manager
Somersworth, N. H.

Type I-50, the first completely new watthour meter in 50 years

Order now from your nearest G-E representative. I-50 meters are available in socket- or bottom-connected types with pointer or cyclometer register. Apparatus Department, General Electric Company, Schenectady 5, N. Y.

Exclusive Features for Lower Maintenance

1. Co-ordinated insulation—for better performance under adverse conditions.
2. Magnetically suspended rotating element—to do away with bearing maintenance.
3. Braking magnets die-cast in frame—to assure calibration stability.
4. Current coil molded in butyl and potential coil in polyethylene—for greater insulation and stability.
5. One-piece molded "S" base—to minimize corrosion

GENERAL ELECTRIC

6111-32

The Electrical Week

The first power to come from the two Missouri Basin plants at Garrison Dam, N. D., and Fort Randall Reservoir, S. D., will go to "preference customers." What is more, the power from later installations is likely to go their way also. The reason for this is simple. They want it and the law says they can have it . . . In an article written especially for ELECTRICAL WORLD, C. Girard Davidson, Assistant Secretary of the Interior, gives Interior's stand on the Roanoke Rapids project. If Interior can make good its interpretation of the law, privately owned power companies will find it more difficult to build hydro plants . . . In Idaho, Interior has gone into federal court to stop Idaho Power Co from building a transmission line across government lands unless the utility will agree to wheel power . . . And at least the Atomic Energy Commission has recognized the electric power industry's vital interest in atomic energy. Phil Sporn of American Gas & Electric will head an industry committee to lay the basis for permanent cooperation between AEC and the utilities.

In the New York metropolitan area about 40% of the 3.5 million television sets are believed to be owned by persons living in multiple dwellings.

The Los Angeles Department of Water & Power, which is replacing its d-c distribution system, has dug up some of the original underground cables laid in 1895 and found them in good condition.

Rural electrification is an ill wind that hasn't blown the windmill manufacturers any good. But in the case of the Fairbury (Neb.) Windmill Co perhaps it has. The firm is meeting the challenge by spreading to other lines, especially the distribution of pumps and other plumbing supplies.

McGraw-Hill Publishing Co has been given the "green light" to sell its magazines in Western Germany. The Economic Cooperation Administration has guaranteed that funds up to $30,000 may be transferred from marks to dollars. ELECTRICAL WORLD will be one of the magazines promoted.

Investigation of the United Electrical Workers by the House Un-American Activities Committee is being branded by left-wing supporters as an attempt to help the right-wing opposition in the union's election of officers next month. Committee Counsel Frank S. Tavenner says information has been received "indicating Communist influence in the union in the Pittsburgh area, affecting some vital and strategic industrial plants."

A novel incentive to higher production is contained in terms of a bond issue to raise funds for hydro development proposed by the French government corporation handling electrical production and distribution. The interest rate will rise with the increase in power production. By 1954, if output has increased 38%, as planned, the buyer of 4% bonds will get 5.52% interest. He can pay his electric bills with coupons at a 10% premium so that the actual initial interest rate will be 4.4%—6.57% in 1954.

In 20 years, Dr Howard C. Hardy, of the Armour Research Foundation believes, radios will be built into houses just as electric light fixtures and plumbing are today.

Boston Edison Co, according to the Federal Power Commission, has been burning coal at its Mystic Plant at a cost of 33.05c per million Btu. Central Power & Light Co at its plant at Corpus Christi, Tex., has been burning natural gas at the cost of 3.28c per million Btu. This may help explain why electricity is more expensive in some areas than others.

Backers of the St. Lawrence seaway and power project have lost their fight to avoid new Senate hearings. They argued that the Senate has held many lengthy seaway hearings, the last one just two years ago. But a Foreign Relations subcommittee to review seaway plans has been named. It will start hearings next year.

Notes From The News

Tennessee cooperatives are roundly condemning the State Railroad and Public Utilities Commission. It has increased their assessed value for taxation from $5 million to $21 million . . . The University of Illinois is taking good care of its Department of Electrical Engineering. For the coming school year it has the largest budget of any department, $447,650 . . . A blackout in Memphis, Tenn., last week was attributed to a cleaning fluid's seeping into a transformer. A maintenance crew was using the fluid to clean the floors of a substation . . . A Jap has come up with what drinking men will hail as one of the greatest uses of electricity. Using a "secret" electrical process, he is converting sweet-potato alcohol and water into rye, bourbon, or Scotch. Scotch can be "aged" 15

Continued on following page

2 TESTIMONIALS are the result of this accident at Searcy, Ark. Despite the force of the impact, the wires of the Arkansas Power & Light Co were not taken out of service, and the meter was undamaged

years in 12 minutes . . . The National Association of Corrosion Engineers will conduct a "Short Course in Corrosion" Sept 12-16 at the University of Texas, Austin. Registration is being conducted by Executive Secretary A. B. Campbell, 919 Milam Building, Houston 2, Texas.

Union Electric Co of Missouri, which won the $1,000 Coffin Award at the last EEI convention, is now conducting a contest among its employees to decide the best use for the money. The prize is $100 . . . The manufactured gas industry has one thing in common with the electric utility industry—the complaint that the cost of fuel has risen more sharply than rates . . . Public Service of Colorado reports that at its Lacombe Plant magnets draw as much as two tons of scrap metal from the coal entering the pulverizers . . . For odd job work around one of its coal mines, Union Electric Co has just bought an auto. This wouldn't be unusual except for the age of the car. It is a 1930 Ford coupe.

Clarks Hill Dam on the Savannah River is about a third completed . . . All sections of the country have not shown an increase in electric energy production over the corresponding week of 1948 since early in January . . . The next issue of ELECTRICAL WORLD will be the Forecast Issue. The idea is to help utilities prepare their budgets for next year.

Financial:

Dividends on West Penn Electric Co common are still on the upgrade. For the first three quarters of this year dividends per share have been 25¢, 37½¢, and 45¢ . . . Pennsylvania Power & Light reports that its 87,000-share issue of 4½% preferred has been oversubscribed. Sales were reported to be heavy in the company's service area . . . Common shareholders of General Public Utilities Corp are to be offered the right to acquire the 835,000 common shares of the utility's subsidiary, Rochester Gas & Electric Corp. The basis is to be one share of Rochester for each ten of General held.

Lower Colorado River Authority will sell $17.7 million of bonds to finance its construction program . . . Potomac Edison Co has received permission of the Maryland Public Service Commission to purchase $615,000 worth of stock from two subsidiaries, Potomac Light & Power Co and South Penn Power Co. The sellers will use the money for construction . . . North American Co will transfer part of its West Kentucky Coal Co properties to Union Electric Co of Missouri. Stockholders of North American will receive all of the common stock of the coal company on a one-for-ten basis.

Manufacturers & Markets

Lead is still on the "onward and upward" path. The price has reached 15½¢ New York . . . June factory sales of standard-sized household washers totaled 272,000 units, highest monthly sales of the year, but 29.6% below the 386,685 units sold in June, 1948 . . . Mitchell Manufacturing Co, Chicago, will fair-trade its new "Mitchell Module" lighting fixtures. Claims are made that this is the first time in the lighting industry that fixtures have been fair-traded at the wholesale level . . . Stockholders of McGraw Electric Co and Line Material Co voted recently to merge their companies. The merger now depends on approval of the board of directors of McGraw . . . Westinghouse Electric Corp has announced a motor exchange plan for single and 3-phase, 1 to 20-hp, frame 203 to 326, a-c motors . . . ECA has allotted $17 million to Great Britain to buy copper and aluminum in Canada . . . Apex Electrical Manufacturing Co employees will total 1,663 this month, a 67% increase over last May.

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Missouri Power to Be Public Power

First Energy from Garrison Dam and Fort Randall Reservoir to Be Allotted to 'Preference' Customers Which Have Already Requested Twice as Much

FIRST BLOCKS of firm power from federal hydroelectric plants in the gigantic Missouri Basin project will go to public bodies, rural electric cooperatives and other "preference customers" in five states.

Two main-stem Missouri River hydro plants, at Garrison Dam, N. D., and Fort Randall Reservoir, S. D., are scheduled to begin operation in 1953 and 1954. Initial firm power output of the two plants is estimated at approximately 300,000 kw. But already more than 200 would-be purchasers have asked for this energy, their requests for firm power totaling more than 600,000 kw.

"Preference Customers" First

Among the applicants are eight privately-owned electric utilities; the others are "preference customers"—municipal power systems, other public bodies and federally-financed rural co-ops. The government's power marketing policy, set by the Interior Department, almost certainly will bar the eight companies from sharing in the initial Garrison-Randall output of firm power. And if demands of "preference" buyers continue to mount, these and other utility companies can expect to purchase little of the ultimate generation of these two plants.

Garrison and Randall, like most down-stream projects in the Missouri Basin development, are being built by the Army Engineers. But, in compliance with legislation authorizing construction of the projects, the Interior Department will market the energy from Army plants, as well as those being built by the Reclamation Bureau in the Basin. And Interior will follow the "preference" standards laid down for power marketing in the 1944 Flood Control Act and subsequent legislation.

Too Many Requests

The "preference" standard, however, does not end Interior's problem in allocating Garrison-Randall energy. For example, total firm power requests from applicants in the public power state of Nebraska total 367,109 kw., as against the anticipated initial output of 300,000 kw. Practically all the Nebraska applicants have "preference" status, either as public power districts, municipally-owned systems, or cooperatives.

Individual Applications in Terms of 1954 Requirements for Firm Power Summarized by States

	Applicants Entitled to Preference		Other Applicants		Total	
	Kw	Kwhr (000's)	Kw	Kwhr (000's)	Kw	Kwhr (000's)
North Dakota	59,656	219,242	104,900	515,380	164,556	734,622
South Dakota	61,310	223,884	45,420	252,540	106,730	476,424
Minnesota	51,440	201,201	83,500	459,000	134,940	660,201
Iowa	58,200	219,814	10,000	43,800	68,200	263,614
Nebraska	367,109	1,596,485	0	0	367,109	1,596,485
Missouri	40,000	162,000	2,700	10,800	42,700	172,800
Total	637,715	2,622,626	246,520	1,281,520	884,235	3,904,146

To further sift out demands for this energy, Interior recently (Aug 4) established further criteria for distribution of Garrison-Randall power, both firm and secondary.

First, the Reclamation Bureau, which will assume Interior's marketing responsibility in the Basin, will consider applications for firm power from only five states. These include all of North and South Dakota, and those portions of Nebraska, Iowa and Minnesota lying within 150 miles of Fort Randall.

Second, "preference" rights of public bodies and similar agencies and co-ops will be "fully observed." Apparently, this standard will apply to sales of secondary, as well as firm, energy, though Interior obviously contemplates sales of secondary to utility companies.

Third, a basin-wide transmission system will be built, to implement sales of power to "preference" applicants, as well as to interconnect the federal projects.

Fourth, secondary and dump energy will be sold to preferred customers and power companies "in substitution for fuel generation." Rates will be the lowest "consistent with sound business principles," Interior says.

Missouri Basin power systems have awaited with considerable interest indications of the manner in which the Garrison-Randall generation is to be sold. As the first substantial block of Missouri Basin project power, its distribution probably will set the pattern for disposal from subsequent plants.

The two plants also may establish a basin-wide federal rate pattern. Interior has announced it is attempting to work a "postage stamp" rate for the area. This will be accomplished by pooling revenue of all plants to meet total power costs.

The eight private companies which have applied for Garrison-Randall energy are the Black Hills Power & Light Co. which seeks delivery in South Dakota; Central Electric & Gas Co. South Dakota; Missouri Service Co. Missouri; Montana-Dakota Utilities Co. North and South Dakota; Northern States Power Co. South Dakota and Minnesota; Northwestern Public Service Co. South Dakota; Otter Tail Power Co. North and South Dakota and Minnesota; and Sioux City Gas & Electric Co. Iowa.

Interior's service area specification apparently eliminates chances of the Iowa and Missouri utilities to obtain energy, either firm or secondary.

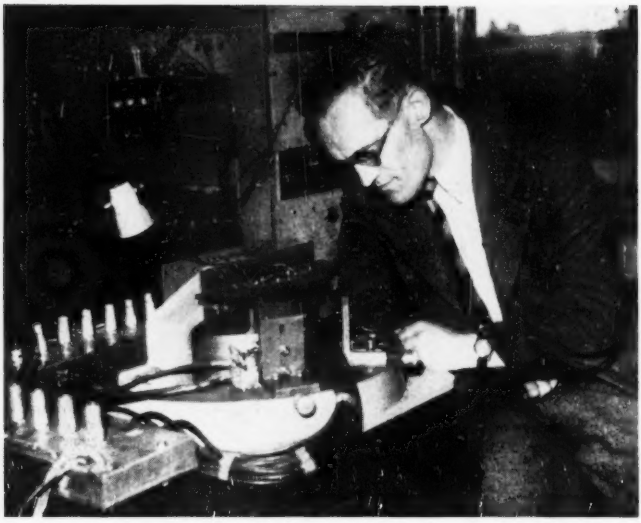
A total of 206 "preference" applicants from the five states to be supplied by Garrison and Randall are seeking energy. These applicants include 18 co-ops and one municipal system in North Dakota; 27 co-ops and 13 municipals in South Dakota; 26 co-ops and three municipals and power dis-

Community Spirit?

In Council Bluffs, where Iowa Power & Light Co is installing a new street lighting system, a man called the mayor's secretary to complain that his trees were being topped and that he didn't like it. "Why can't the poles go in across the street?" he wanted to know. When asked if the trees across the street would have to be topped, he replied "Yes."

The secretary said, "In other words, it's all right to top the neighbors' trees but not yours?"

At this the irate citizen shouted, "You can't argue with a woman." Then he banged the receiver.



BRITAIN'S first mechanical brain is being installed at Manchester University, where it will be used to do complex mathematical calculations for research problems. Prof. F. C. Williams is examining part of the complicated apparatus before it is installed

tricts in Nebraska; 15 co-ops and one municipal in Iowa; and 11 co-ops and 10 municipals in Minnesota. Nebraska's power districts also are seeking federal energy and are attempting to coordinate their applications with those of other preference applicants in the state.

•

5 American Utilities Will Buy Canadian Energy

Five Washington and Oregon power companies have agreed to purchase up to 30,000 kw of block power daily from British Columbia Electric Railway Co.

The power agreement, which provides for purchase of a minimum of 70% of the maximum to be supplied, involves Pacific Power & Light Co, Portland General Electric Co, Washington Water Power Co, Puget Sound Power & Light Co, and Mountain States Power Co.

Transmission lines of Bonneville Power Administration and Seattle City Light will be used, with power coming from British Columbia over the Arlington, Wash., interconnection. Cities benefiting from augmented power supplies will include Portland and Albany, Ore., and Seattle and Spokane, Wash.

The power was made available by the recent completion of additional generating facilities at BCER's Bridge River hydro plant. A second 62,000 hp unit was put into operation this spring; a third will go into production this fall.

Sturgis Weighs Buying Power from Private Firm

Sturgis, Mich., has asked Indiana & Michigan Electric Co to submit a power service contract for its consideration.

Demand has reached the point where the city must either increase the municipal diesel plant or buy from an outside source. City Manager Worth N. Yoder said it would cost about $1 million to finance a new power plant. An additional 1,000-kw unit at the present plant would cost about $50,000, but the building has no space for it.

Under a tentative Indiana & Michigan proposal, the utility would agree to supply Sturgis with a reserve capacity of 1,500 kw. The firm would build a 66-kv transmission line from Lagrange, Ind., at its own expense.

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Utility Merger Planned

California Electric Power Co wants to acquire and merge into its system all the electric facilities of San Gorgonio Electric Corp. In its application to the Federal Power Commission for permission California Electric also asked FPC to authorize the issuance of 17,614 shares of common stock as payment for the San Gorgonio facilities, which include two power plants. All of the properties are now operated by California Electric under a lease which expires in 1952.

U. S. May Close Power Plant in Nation's Capitol

After appropriating millions of dollars for federal power plants elsewhere, the 81st Congress soon may vote to get the government out of the generating business in Washington.

A group of engineers, on the job for the past three years, has recommended abandonment of power generation in the 39-year-old capitol power plant. Instead, they urged that electricity for the capitol and surrounding federal buildings be purchased from the Potomac Electric Power Co. A renovated capitol power plant would continue to supply steam and air conditioning for the capitol, the House and Senate office buildings, and several other nearby federal offices.

A House commission, headed by Speaker Sam Rayburn, is expected to endorse these plans, which already have the approval of capitol architect David Lynn. Besides abandoning the generating plant, the program calls for modernizing the capitol's lighting and wiring, and improving and extending the heating and air-conditioning systems at a total estimated cost of $16,140,000.

The engineers estimated that the capitol's electric power could be purchased from Pepco at an annual cost of about $359,000, on which the company would pay taxes of about $35,000. The government is paying three times as much, it was reported, to get its power from two 25-cycle units.

More than half the energy produced by these decrepit machines must be converted to direct current for lighting and to operate motors. This has resulted in a conversion loss of some 25%, or about 5 million kwhr a year. In addition, it has been necessary to purchase conversion equipment for most of the office machines in the area supplied by the existing plant.

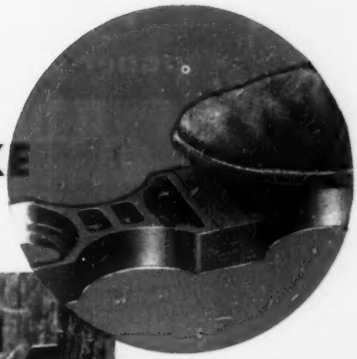
The engineers recommended recycling of the distribution system and complete rewiring of the buildings at an estimated cost of $7.6 million to avoid serious interruption of business in the buildings, the program would be carried out piecemeal over a four-year period. Pepco would be asked to supply about a third of the peak load initially.

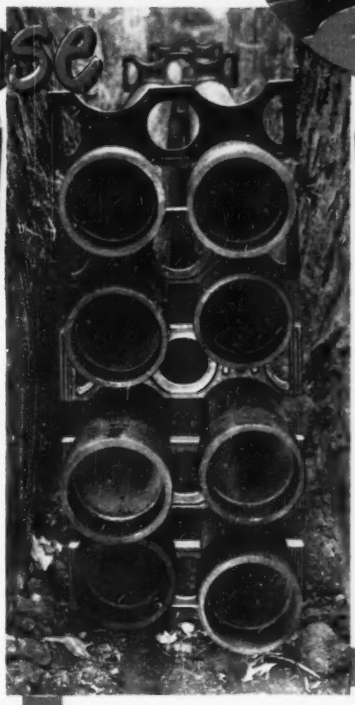
•

Funds for Unit Approved

Borrowing of $130,000 for completion of installation of a fourth, 6,750-hp, hydro unit at the Nelson, B. C., power plant, has been authorized by property owners. The new unit will double the plant's capacity.

new L-M SPACERS AND L-M EQUIPMENT MAKE L-M FIBRE CONDUIT easier to use





The new L-M Clevelon two-way Spacer assures faster installations with precise, even spacing of the conduit. L-M Spacers are light, durable, strong. They withstand a vertical flat crushing test of over 1200 pounds. Ends are grooved, so that they lock together for joining into multiples; centers are notched for sawing, for uneven-numbered combinations. Clevelon is fire-resistant and listed as standard by Underwriters' Laboratories, Inc. Spacers come in standardized cartons which save stockroom handling and space. Available from stock, in six standard sizes.

L-M FIBRE CONDUIT WITH L-M SPACERS

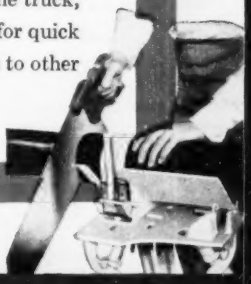
L-M Fibre Conduit is tough, strong, resistant to acids and alkalis, heat and cold. Smooth inside finish has low resistance to cable pulling, without abrasion. Complete line of couplings, adapters, reducers, elbows, and bends.

NEW L-M TAPER-TOOL

Cuts a precise 2° taper to assure tight, snug joints. Light; easy to use; salvages cut ends and short lengths.

NEW L-M FIBRE CONDUIT VISE

Holds all sizes of conduit firmly for cutting or tapering. Use it in the shop, on the truck, or at the job. Three detachable legs for quick field set-up. Tripod stand adjustable to other types of vises.



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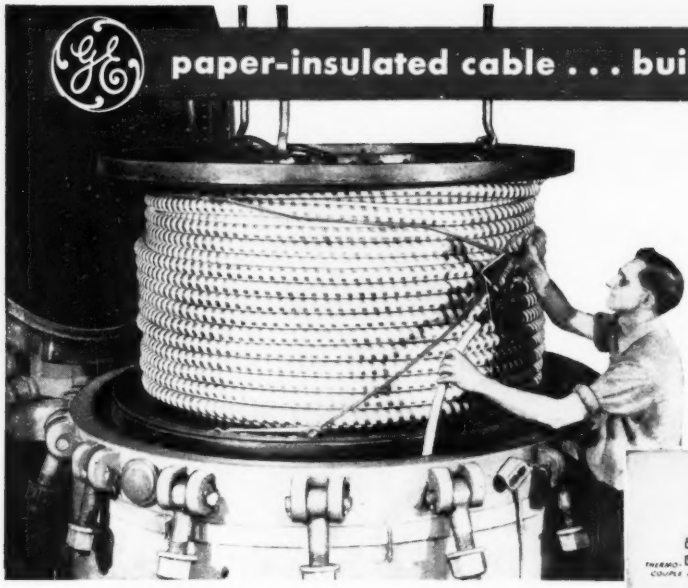
Complete Coordinated Equipment for All Distribution Requirements

paper-insulated cable . . . built for stability



VACUUM-DRIED . . .
electrically
—to give uniform quality, long cable life!

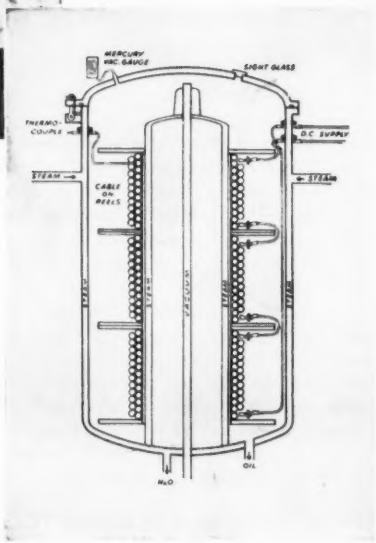
It's only one example, but *electric* vacuum-drying is typical of the extra care that goes into the making of General Electric paper-insulated cable, solid and gas-filled types. By means of this exclusive process, all air and moisture is removed from the assembled cable prior to impregnating, and the cable is heated and dried *uniformly* throughout. This leads to *uniform* quality that assures you of long years of cable service.

Test after test for cable quality!

In many other ways, too, General Electric makes sure of the quality of the cable you get. Over 25 different tests are made on the copper, paper, oil and lead used. Special machines of G-E design, equipped with automatic constant-tension devices, apply paper to the conductors with even-spaced uniformity. Insulation is applied in a special, constant-humidity room, to maintain uniformity of paper tension after moisture is removed.

Complete control for dependability!

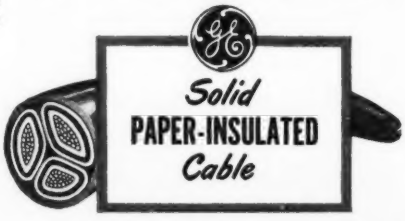
As a further control, each cable is tested 14 different times during manufacture, with over 40 different points checked! With precision methods like these, you can depend on every foot of G-E paper-insulated cable. Check with your local G-E representative on what savings it can mean to you. *Section W 36-827, Construction Materials Department, General Electric Company, Bridgeport 2, Conn.*



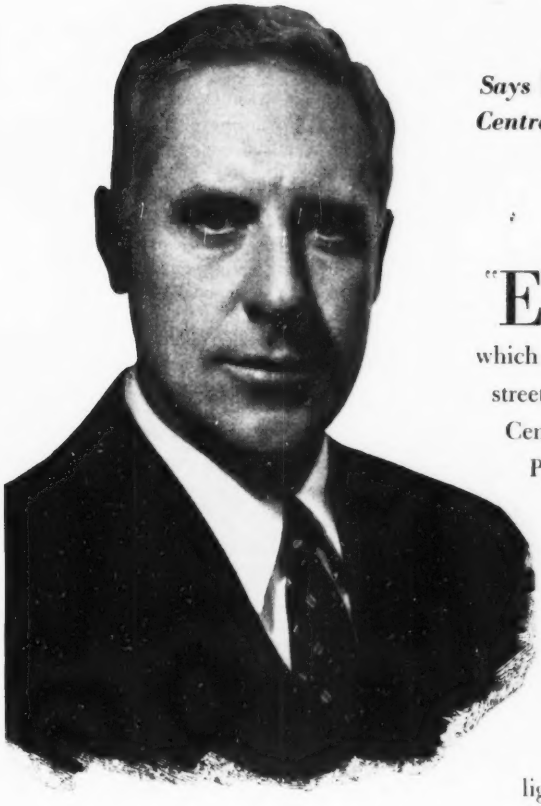
Here's how it's done!

Before impregnating and leading, reels of General Electric paper-insulated cable are placed in a steam-jacketed drying tank, as shown in photo and diagram above. Conductors are attached to vacuum-tight leads connected to high-current generators. The heat generated is *inside* the cable where it is most effective—assuring uniform heating and drying during the vacuum process. Steam, introduced around the tank and in the center dome, maintains constant temperature throughout the tank. Thus—electrically-uniform heating and drying are obtained throughout the cable's length.

GENERAL ELECTRIC



"I know of no better way to build good will than through the medium of MODERN STREET LIGHTING"



Says **Ernest R. Acker,** *President, Central Hudson Gas & Electric Corp., Poughkeepsie, New York*

"EVERY progressive utility in the nation can enhance its position in communities which it serves through the promotion of planned street lighting," says Ernest R. Acker, President, Central Hudson Gas & Electric Corporation, Poughkeepsie, N. Y.

"In many cases," continues Mr. Acker, "it is the one positive visual contact between the taxpayer and the utility, and this street lighting service can be a powerful force in creating good public relations between the two.

"People look upon modern street lighting as a *safe* investment for their community . . . for it pays *real* dividends in terms of increased property values, better business for local tradesmen and materially reduces crime and accidents. In the building of better public relations, of all the sales tools at their command, utilities will find street lighting the most effective."

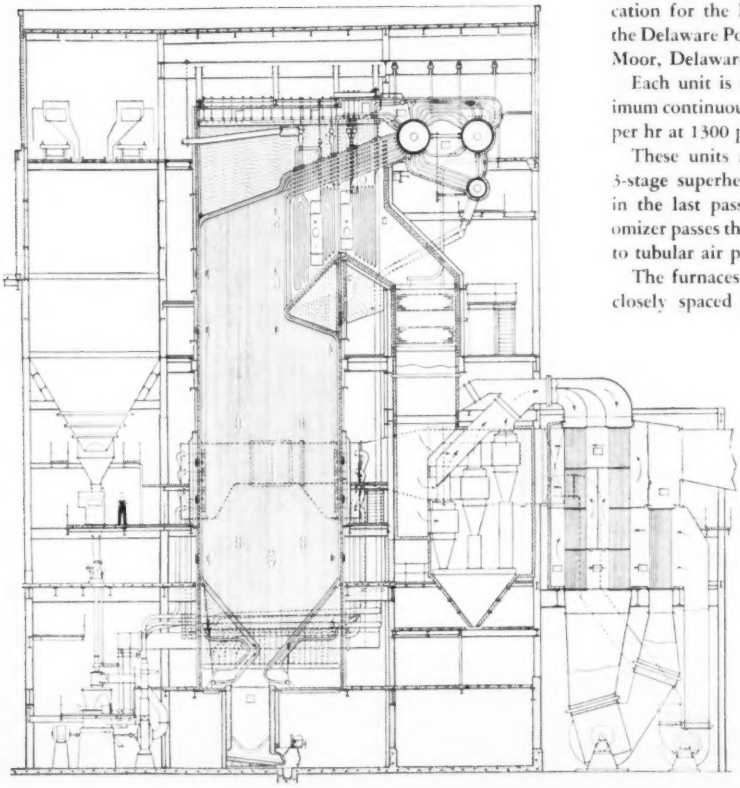
FOR MORE FACTS . . .
To "shed more light" on methods employed by a utility to stimulate interest in modern street lighting, write for your free copy of "A Planned Program for Better Street Lighting."

The Street and Traffic Safety Lighting Bureau, 155 East 44th St., New York 17, N. Y.

Recent C-E Steam Generating Units for Utilities

EDGE MOOR POWER STATION

DELAWARE POWER & LIGHT COMPANY



THE C-E Unit illustrated here is one of two duplicate units now in process of fabrication for the Edge Moor Power Station of the Delaware Power & Light Company at Edge Moor, Delaware.

Each unit is designed to produce, at maximum continuous capacity, 600,000 lb of steam per hr at 1300 psi and 950 F.

These units are of the radiant type with 3-stage superheaters and economizer surface in the last pass. Fuel gas leaving the economizer passes through precipitators and thence to tubular air preheaters.

The furnaces are fully water cooled, using closely spaced plain tubes, and are of the basket bottom type, discharging to sluicing hoppers.

The units are pulverized coal fired, employing Bowl Mills and Vertically-adjustable, Tangential Burners. Burners are arranged for the use of oil as an alternate fuel when desired. B-342

C-E

Combustion Engineering–Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

200 MADISON AVENUE, NEW YORK 16, N. Y.

Interior's Stand on Roanoke Rapids Plan Stated by Assistant Secretary

Does a river basin study by a federal agency, with approval of Congress, preempt for the government the right to build hydroelectric projects in the area? Or can private enterprise under licensing provisions of the Federal Power Act, share in the development except at sites specifically authorized by Congress for federal construction? This is the question posed for the Federal Power Commission by Virginia Electric & Power Co's application to erect the Roanoke Rapids project. FPC has concluded hearings and is awaiting the filing of final briefs in September. But the viewpoint of the Interior Department, which is opposing the Vepco application, is of obviously vital concern to the industry. That's why ELECTRICAL WORLD asked Assistant Secretary C. G. Davidson to prepare the following article.

The publishing of this statement does not imply agreement with any portion. ELECTRICAL WORLD is in complete disagreement with the statement that "The companies have not taken full advantage of the opportunities open to them"; the further point that "it would be unfair and bad business judgment to turn these benefits over to privately owned utilities"; and other assertions.

Nevertheless we feel that our readers should receive a clear picture of the Interior Department's opinion, for this is the thinking with which the industry has to contend.—Editor.

By C. Girard Davidson
Assistant Secretary of Interior

UPON RECOMMENDATION of the Army Engineers, concurred in by the Federal Power Commission, Congress in the Flood Control Act of 1944 approved a general plan for comprehensive development of the Roanoke River basin for flood control and allied purposes.

This comprehensive plan consists of 11 dams and reservoirs and is to be carried out by the Army on a step-by-step basis, with the Buggs Island and Philpott projects as the initial step in the development. Roanoke Rapids is the most downstream project in this comprehensive plan.

The Secretary of Interior contends that since Congress has by law reserved this project for development by the United States anyone desiring to make a different use of this site must come to Congress, not to the Federal Power Commission. The Secretary's position is that the integrity of the law must be preserved; that acts of Congress approved by the President, can be repealed or modified only by acts of Congress approved by the President; and that neither the Federal Power Commission nor any other agency of government can exercise power or jurisdiction inconsistent with the law.

By Section 5 of the Flood Control Act of 1944 the Secretary is charged with responsibility for disposing of all surplus power and energy from reservoir projects under control of the Department of the Army. His main problem in the disposition is not merely to change power or energy into cash, but to distribute the power benefits among the people of the region in accordance with standards prescribed in the Act, including the preference to public bodies and cooperatives. As guardian of the power benefits for the public he must oppose any move which would take these benefits from the United States and give them to a privately owned power company.

The Buggs Island reservoir now being completed by the Engineers, some 40 miles above the Roanoke Rapids site, is a very costly project. One justification for its construction is that because of it Roanoke Rapids becomes a very valuable project.

If the government should construct Roanoke Rapids as planned by the Virginia Electric & Power Co, the net power benefits would be about $2.3 million per year, or $115 million over the 50-year period of an FPC license. These power benefits should be made available to reduce the cost of the upstream developments with the result that the average cost of power from the comprehensive plan would be accordingly reduced.

Since the law requires that the power be disposed of at cost, the $2.3 million per year should inure to the benefit of the ultimate consumers. Virginia Electric & Power Co had an opportunity to develop Roanoke Rapids. In fact, it filed an application for a license to construct this project in 1929 but withdrew the application in 1935. Now that the government has spent huge amounts in developing the comprehensive plan and in constructing Buggs Island, the company again seeks a license to construct the Roanoke Rapids project. The Secretary's position is that the company should not be permitted to skim off the cream from the government's undertaking.

There has been some speculation as to the consequences of this case if the Secretary's position prevails. In any view, one important consequence is a reminder to the industry that the water resources of streams throughout the country have to be developed. Since 1920, private power companies have had an opportunity to develop these streams for power purposes in accordance with the requirements, first, of the Federal Water Power Act of 1920, and later, of the Federal Power Act. The companies have not taken full advantage of the opportunities open to them. The federal government has had to step in to harness streams for flood control and allied purposes.

The opportunity for these developments by private industry still exists; but when the government, because of the failure of industry to develop the project sites, steps in and undertakes to develop such sites, the benefits of such developments must inure undiminished to the people. It would be unfair and bad business judgment to turn these benefits over to the privately owned utilities.

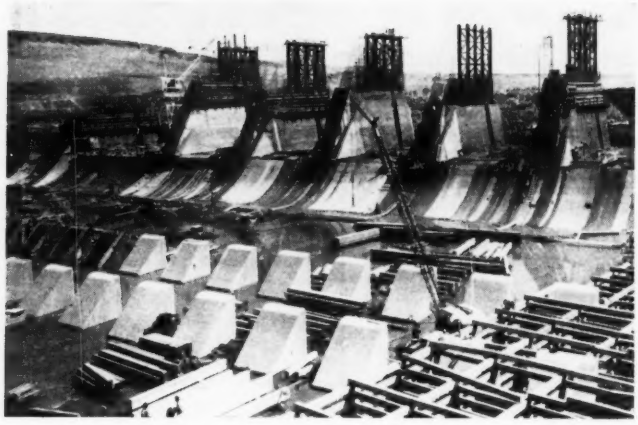
•

Indiana Public Service Plans to Absorb Neighbors

An agreement has been reached whereby Public Service Co of Indiana will take over Southeastern Indiana Power Co, Rushville, Ind., by an exchange of stock. The arrangement is subject to Public Service Commission of Indiana and Securities and Exchange Commission approval.

The offer, expected to be made in October, will be to exchange 1½ shares of Public Service common for each share of Southeastern common and 4½ shares of Public Service for each share of Southeastern preferred. A full exchange would require Public Service issuance of 81,676 common shares, but the agreement states that an 80% exchange will be needed to make the transaction effective. If dividend rates remain unchanged, Southeastern common shareholders would get $2.40 a year as compared with $1 now and its preferred stockholders would get $7.20 annually against $5.50 now.

Southeastern serves 8,354 customers in 11 counties in the midst of Public Service territory, southeast of Indianapolis. It operates in 57 small communities.



HUGE CONCRETE PIERS give preliminary form to the spillway section of McNary Dam on the Columbia River. When the water starts flowing over the spillway in December 1953, it will be broken up against the concrete baffles seen in the foreground

Interior Acts to Stop Idaho Power Line Unless Wheeling Is Permitted

A YEAR-OLD squabble between the Idaho Power Co and the Department of Interior has reached a federal court.

Interior, represented by the Justice Department, is suing to stop what it termed "trespass" by the company on public lands. But the real fight is over Interior's attempt to force applicants for right-of-way across public lands into agreements to wheel federal power.

Armed with a temporary restraining order issued a week earlier, Interior charged the utility with "willful trespass" in the District Court at Boise on Aug 15. Government attorneys alleged that Idaho Power had started construction of a $3 million, 138-kv transmission line from Boise to American Falls across large segments of the public domain. They asked Judge Chase A. Clark for a permanent injunction to prevent further construction and an order requiring removal of facilities placed on the public land.

Idaho Power first applied to the Bureau of Land Management for permission to construct the disputed line over public lands in July, 1948. In subsequent conferences, the Interior agency demanded that the company agree, in advance of receiving a construction permit, to interconnection of the line with federal power facilities in the area and to use of the "excess capacity" of the line to wheel federal energy.

In October, 1948, Interior published a new regulation governing the granting of easements and construction permits for use of the public domain. This regulation would force all power companies seeking such rights-of-way to agree to interconnection with federal facilities and transmission of federal energy as stipulated by the Secretary of Interior. This ruling was protested immediately by a group of Western utilities, including Idaho Power. Apparently, however, this regulation never was relaxed.

After considerable dickering, Idaho Power withdrew its application for right-of-way in April, 1949.

The company's original application to the Interior Department described the line as necessary to serve "rapid growth of system load" and to serve phosphate furnaces with contracts for service in 1949 and 1950. The 185-mile line would extend eastward from the Boise area to Idaho Power's Bliss Dam and hydro plant and thence to American Falls.

At Boise, T. E. Roach, president of Idaho Power, told ELECTRICAL WORLD that all work on the line has been stopped.

"The government's suit does not involve the obtainment of right-of-way for the lines, which is now pending before the Federal Power Commission. Under federal law FPC is authorized to issue licenses for hydro projects, including transmission lines to connect the company's primary transmission system. The question is only one of advance permission to construct across government lands, pending action by the FPC."

Stressing the need for the lines to serve the company's consumers, he called the action "unprecedented in 33 years during which Idaho Power has used right-of-way across Uncle Sam's Sagebrush desert and embarrassing to the company."

"The effect of the (wheeling) stipulation is to make a common carrier out of the facilities Idaho Power must have to provide adequate and dependable electric power for the use of its customers," Roach asserted. "It would place in jeopardy the investment of 3,000 local stockholders and of not only the $6 million cost of new lines, but the new power generating facilities we are constructing.

"In its order of March 2, 1948, authorizing issuance of license for the company's Bliss hydro project, the FPC reserved the 'right to determine at a later time what transmission facilities should be included in the license as a part of the project.' In April, 1949, the company filed application for inclusion of these lines as a part of the project facilities and requested advance permission to proceed with construction. This was granted by the FPC subject to requirements of the Interior Department, which again insisted upon agreement to its stipulations with minor changes but including the power wheeling provisions."

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Hotpoint Will Cooperate with Utilities in Promotion

Hotpoint, Inc, plans the immediate launching of a nationwide market development program Pres James J. Nance announced in San Francisco recently.

Cooperation with public utilities, he reported, would be the No. 1 objective in the Hotpoint plan for accelerating sales of consumer electrical goods.

Nance said the sales promotion program had been planned for later this year but was being moved up because of economic conditions he has found in a two-months' tour of the country.

Nance declined to elaborate on just how utilities were going to fit into the Hotpoint plan to stimulate appliance sales. He did say that a series of conferences and clinics has been planned with electric utility officials.

The second major step in the Hotpoint program will be sales training clinics in principal market areas, sponsored by the manufacturer and aimed at developing dealer selling techniques to meet present buyers' market conditions.

OUTSIDE BRICK WORK at the Knox Lee Plant of Southwestern Gas & Electric Co has been completed. The plant is being erected on Lake Cherokee, an artificial lake built by funds contributed by citizens of Rusk and Gregg Counties, Tex. The plant is located in the latter. A 30,000-kw unit is scheduled for next February, a second a year later

AEC Names Committee to Assist in Reactor Program, Inform Industry

RECOGNITION of the electric power industry's vital interest in atomic energy development finally came this week (Aug 14) with the establishment of an industry committee to work with the Atomic Energy Commission.

The committee, headed by Philip Sporn, is temporary—it will most likely wind up its duties early next year. But its chief objective is to pave the way for organization of a permanent industry advisory committee to bring technical know-how into the AEC power reactor program, on the one hand, and to keep the industry informed on nuclear power development on the other.

Chairman Sporn, who is president of American Gas & Electric Co and the American Gas & Electric Service Corp, will share this responsibility with two other industry representatives on the temporary committee. They are Edward W. Morehouse, vice-president of General Public Utilities Corp, and Walton Seymour, chief of the Interior Department's Division of Power.

The committee will make a survey of AEC's reactor program, visiting the Commission's several developmental installations and examining technical information on reactors. The group is expected to start this work almost immediately. Target date for its report to AEC has been set for next March 31.

The group will make two general recommendations to AEC. The first of these will include the Sporn committee's findings on the need for industry-government cooperation in the nuclear energy field, on the desirability of a permanent industry advisory committee, and suggestions as to the membership and functions of such a permanent body. The second will deal with AEC's more specific operating problems, including recruitment, training, and use of technical personnel from the power industry.

There has long been a clamor from certain areas of the power industry for recognition of the industry's interest in and desire to cooperate with the nation's atomic energy program. This demand was pointed up in the report last winter of the general industrial advisory committee headed by James W. Parker, president of Detroit Edison Co. A major recommendation of the Parker committee called for increased cooperation between AEC and private enterprise, with emphasis on establishment of advisory committees and interchange of technical knowledge.

AEC Chairman Lilienthal acknowledged the influence of the Parker group in setting up the new committee. At the same time he hinted that the AEC reactor program was approaching a stage requiring power industry aid.

Naming of the Sporn committee was the second event within a week signalling a more vigorous attempt by AEC to inform and enlist the aid of private industry. On Aug 11, a committee of representatives of technical publications and professional societies was named to dig declassifiable information out of the Commission's hitherto impenetrable files.

This group, headed by Sidney D. Kirkpatrick, vice-president of the McGraw-Hill Book Co. will screen AEC's technical data on metallurgy. It will recommend declassification and publication of information it deems valuable to industry. It also will organize information published, or to be published, to make its publication more useful to industry.

BPA Consultants Study Further System Growth

E. W. Boehne has joined E. C. Starr and P. L. Bellaschi as a consultant to the Bonneville Power Administration in studies to determine the best engineering-economic basis for further system growth. Recent increased capacity and heavy loading of the Bonneville transmission system has developed this need for a marked increase in system capability to maintain satisfactory operation.

Work of the three men has been directed toward several aspects of the general investigation. Starr, professor of electrical engineering at Oregon State College, is investigating alternative means of increasing ratio of capability to cost, such as increased voltage, reduced insulation levels, and series compensation. Bellaschi, formerly with Westinghouse, is studying problems of insulation and lightning protection on lines and equipment. Boehne, associate professor of electrical engineering at Massachusetts Institute of Technology and longtime circuit breaker expert with General Electric, is investigating the increased ratings required of switching equipment and effect of reduced insulation levels and high-speed closures.

Preliminary results indicate that reduction of basic insulation level from 900 to 800 kv on the 230-kv system is feasible with an overall saving of 11% in present transmission circuit costs. Comparable savings are anticipated on large transformer banks.

$10 Million Bond Issue Gets Los Angeles OK

Los Angeles Board of Water and Power Commissioners has authorized a $10 million power revenue bond issue needed to complete the financing of a $51,820,000 construction program to take care of present and immediate future demands for electric energy.

Major expenditures are $4,750,000 to complete the Harbor steam plant in Wilmington, including additional oil storage facilities; $7 million for new receiving and distributing stations, and $8 million for construction of overhead and underground distribution lines to provide service for the city's increasing population.

Largest amount to be spent on any single project during the fiscal year is $25,120,000 for the Owens Gorge hydroelectric development project, according to Charles P. Garman, chief electrical engineer. Construction of three power plants will add 150,000 hp of generating facilities.

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PUD Offer Postponed

Washington state PUD's will be unable to make a firm offer for Puget Sound Power & Light Co properties until October, at the earliest, according to Guy C. Myers, PUD financial adviser. A bond issue of about $130 million is necessary to finance the purchase.

SEC RULINGS

Middle West Corp, Chicago, and Consolidated Electric Gas Co, New York, have been granted an exemption from competitive bidding in connection with the proposed sale of their common stock holdings in Upper Peninsula Power Co, Houghton, Mich., consisting of 34,000 shares (17%) and 120,000 shares (60%), respectively, of the common stock, $9 par value. (Release No. 9260).

Wisconsin Public Service Corp, Milwaukee, has received authorization to issue and sell notes in the total principal amount of $1,500,000 to First Wisconsin National Bank, Milwaukee; Citizens' State Bank, Sheboygan, and the Citizens' National Bank, Stevens Point, all Wisconsin. The notes will be dated Aug 1, 1949, to be due Nov 1, 1949, and will bear interest at the rate of 2% per annum. Proceeds are to be used for construction and other purposes. (Release No. 9256).

Washington Water Power Co, Spokane, has been authorized to borrow $4,500,000 from certain banks located in the State of Washington. The funds would be used to repay an outstanding $1,965,000 note and to carry out the company's construction program. The borrowings, which would be represented by notes bearing interest at from 2% to 2¼% and maturing Nov 1, 1950, would be made from time to time from Aug 1, 1949 to Nov 1, 1950. The company intends to repay these loans from the proceeds of permanent financing contemplated for the year 1950. (Release No. 9258).

Commonwealth & Southern Corp has been authorized to include 2,020,000 common shares of Ohio Edison Co as well as outstanding securities in Southern Co, Commonwealth & Southern's holding company subsidiary, in its distribution of assets to common stockholders. This is one of the last remaining steps in liquidation of the company under the Public Utility Holding Company Act of 1935. The distribution is scheduled for Oct 1. The order also directs Commonwealth & Southern to transfer to Southern Co assets remaining after the distribution and after payment of expenses and liabilities incident to consummation of the plan (Release No. 9246).

North American Co has been authorized to distribute to stockholders of record Aug 2 its stock interest in Kansas Power & Light Co. Distribution is to be made Sept 1 in partial liquidation of North American. Involved are 2,143,158 shares of KP&L stock to be received by North American as part of the residual assets of North American Power & Light Co, which is now being liquidated. Shares are to go to North American stockholders on a one-for-four basis (Release No. 9236).

MEETINGS

American Institute of Electrical Engineers
Pacific General Meeting, Fairmont Hotel, San Francisco, Calif., August 23-26; Midwest General Meeting, Netherland Plaza Hotel, Cincinnati, Ohio, October 17-21.

Maryland Utilities Association
Fall Conference, Cavalier Hotel, Virginia Beach, Va., September 9-10.

Instrument Society of America
Clinic on Maintenance of Industrial Instruments, Statler Hotel, St. Louis, Mo., September 9-12; Annual Convention, Municipal Auditorium, St. Louis, September 12-16.

Rocky Mountain Electrical League
Fall Convention, Stanley Hotel, Estes Park, Colo., September 11-14.

Missouri Valley Electric Association
Rural Round-Table, President Hotel, Kansas City, Mo., September 14; Sales and Rural Conference, President Hotel, Kansas City, Mo., September 15-16; Accounting Conference, Robidoux Hotel, St. Joseph, Mo., October 20-21.

★ **Municipal Electric Utilities Association of New York State**
Annual Conference, Hotel Murida, Long Beach, L. I., New York, September 14-16.

Public Utilities Association of the Virginias
Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., September 16-17.

American Chemical Society
National Meeting, Hotel Traymore, Atlantic City, N. J., September 18-23.

Southeastern Electric Exchange
Engineering and Operating Section, Hotel Roanoke, Roanoke, Va., September 19-20; Accounting Section, Henry Grady Hotel, Atlanta, Ga., September 22-23; Personal Administration Section, Henry Grady Hotel, Atlanta, Ga., September 23; Sales Conference, Biltmore Hotel, Atlanta, October 26-28.

Illuminating Engineering Society
National Technical Conference, French Lick Springs Hotel, French Lick, Ind., September 19-23.

Pennsylvania Electric Association
Annual Meeting, Benjamin Franklin Hotel, Philadelphia, Pa., September 20-21; Transmission and Distribution Committee, Fort Ligonier Hotel, Ligonier, Pa., October 20-21.

★ Prime Movers Committee, Hotel Edison, Sunbury, Pa., October 6-7.

Edison Electric Institute
Accident Prevention Committee, Robert Treat Hotel, Newark, N. J., September 22-23; Electrical Equipment Committee, Hotel Van Curler, Schenectady, N. Y., October 3-5; Meter and Service Committee, Leland Hotel, Springfield, Ill., October 3-5; Transmission and Distribution Committee, Lord Baltimore Hotel, Baltimore, Md., October 31-November 1.

Wisconsin Utilities Association
Annual Convention, Accounting Section, Dell View Hotel, Lake Delton, Wis., September 22-23; Joint Annual Convention, Electric and Gas Sections, Schroeder Hotel, Milwaukee, November 21-23.

National Electronics Conference
Edgewater Beach Hotel, Chicago, Ill., September 26-28.

Indiana Electric Association
Annual Convention, French Lick Springs Hotel, French Lick, Ind., September 28-30.

National Television and Electrical Living Show
Second Annual Show, Sponsored by Chicago Electric Association, Chicago Coliseum, September 30-October 9.

National Association of Corrosion Engineers
South Central Region, Adolphus Hotel, Dallas, Tex., October 3-4.

Association of Iron and Steel Engineers
Annual Convention (without exposition) William Penn Hotel, Pittsburgh, Pa., October 3-6.

Canadian Electrical Manufacturers Association
Annual Meeting, General Brock Hotel, Niagara Falls, Ont., Canada, October 4-6.

Iowa Utilities Association
Management Conference, Hotel Fort Des Moines, Des Moines, Iowa, October 10-11.

American Society for Testing Materials
First Pacific Area National Meeting, Fairmont Hotel, San Francisco, Calif., October 10-14.

American Standards Association
Annual Meeting, Waldorf-Astoria Hotel, New York, October 11-15.

International Association of Electrical Leagues
Annual Conference, Hotel Cleveland, Cleveland, Ohio, October 12-15.

Electrochemical Society
Fall Congress, La Salle Hotel, Chicago, Ill. October 12-15.

★ **American Welding Society**
Annual Meeting, Hotel Cleveland, Cleveland, Ohio, October 17-21.

National Safety Council
National Safety Congress and Exposition, Stevens, Congress, Morrison, Sherman Hotels and the Palmer House, Chicago, Ill., October 24-28.

National Metal Trades Association
Annual Convention, Palmer House, Chicago, October 26-28.

National Electrical Contractors Association
Annual Convention, Rice Hotel, Houston, Tex., November 8-11.

National Electrical Manufacturers Association
Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., November 14-18.

Refrigeration Equipment Manufacturers Association
All-Industry Refrigeration and Air Conditioning Exposition, Atlantic City Auditorium, Atlantic City, N. J., November 14-18.

★ Additions this week

Can the cutout take it? Research Engineer and oscillograph watch to see what happens when a 6000 amp 15,000 volt fault current hits. At right: it happens! The fuse blows; the cutout is undamaged.

look what happens in L-M's new "KNOW-HOUSE"

A siren shrieks. L-M Research Engineer Blaine Schultz opens the oscillograph shutter. "BANG!" 6000 amps just blew a fuse in L-M's HXO cutout!

Another test has been recorded in L-M's "Know-House," the big new short circuit testing laboratory in South Milwaukee.

It takes a lot of equipment to make such tests possible. For instance, there is the world's largest high speed short circuit test generator. It provides over 500,000 kva—enough to light a city of half a million momentarily! Over 75,000 amps symmetrical at 4330 volts; up to 15,000 volts 3-phase, 69,000 single-phase.

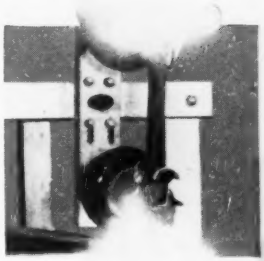
That big generator sits solidly on a million pounds of concrete. Its 14-ton rotor, driven at 3600 RPM, would coast for half an hour except for dynamic braking which brings it to a smooth stop in four minutes.

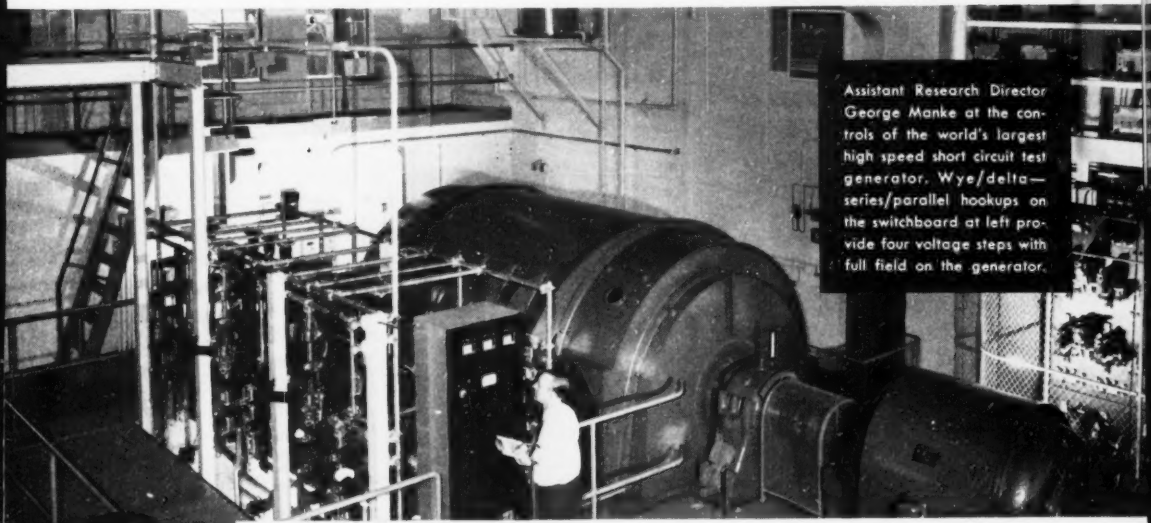
There's a variety of automatic and manual controls. A synchronous switch closes the circuit at any desired point of the 60-cycle wave. A 1,500,000 kva air blast breaker provides back-up protection.

In the control room is an auditorium which permits observers to see the tests and watch the operation of the extensive control and recording equipment. Test cells include one with 12-inch concrete walls and bullet-proof windows for explosive tests.

Much of the equipment is underground, including the oil circulating system, ducts providing 45,000 cfm of filtered air, and the tremendous generator bed.

L-M is one of only four companies in the country with such a laboratory. This means that in addition to its other extensive research laboratories and staff, L-M provides more facilities to assure L-M customers of conservatively rated, *completely tested and coordinated distribution equipment*, more facilities to meet the demand for equipment able to handle the heavier loads of today—and tomorrow.





Assistant Research Director George Manke at the controls of the world's largest high speed short circuit test generator. Wye/delta—series/parallel hookups on the switchboard at left provide four voltage steps with full field on the generator.

LM

LINE MATERIAL... Research

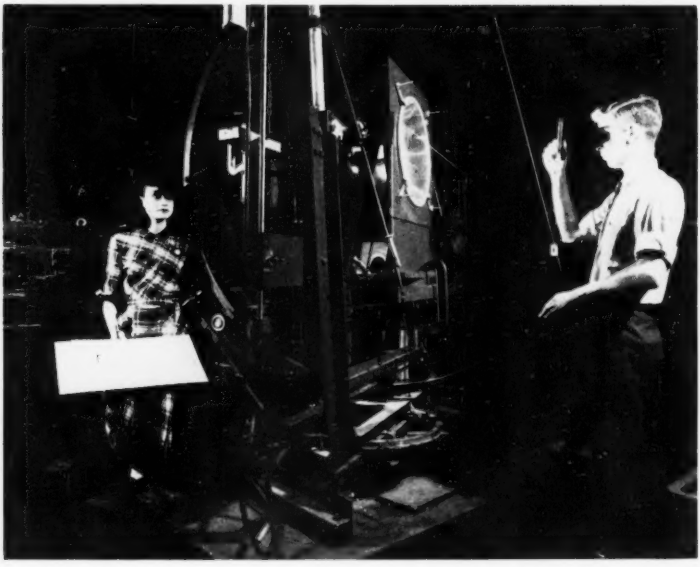
Completely *Tested* and Coordinated Distribution Equipment

LIGHTING BOARD of strategy meets in conference room to inspect isocandle charts. Left to right are these company officials: R. M. Swetland, R. E. Clisdell, J. E. Bock, and R. J. Swackhamer

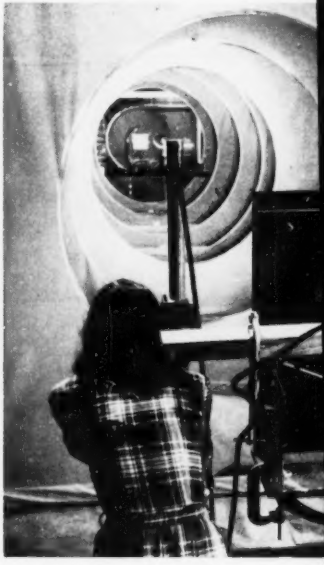
ENGINEERS adjust control board prior to l
is being inserted in sphere photometer. Th

OUTDOOR LIGHTING CENT

General Electric Spends $3.2 Million to Modernize West Lynn, Ma



PRECISE TESTING of all outdoor lighting fixtures is a "must" with laboratory technicians and engineers. Here two check to see that lamp and floodlights are adjusted on the correct axes



TELESCOPIC SIGHT is used by test engineer
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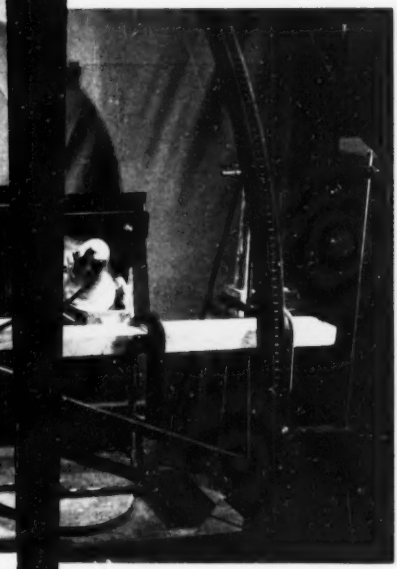
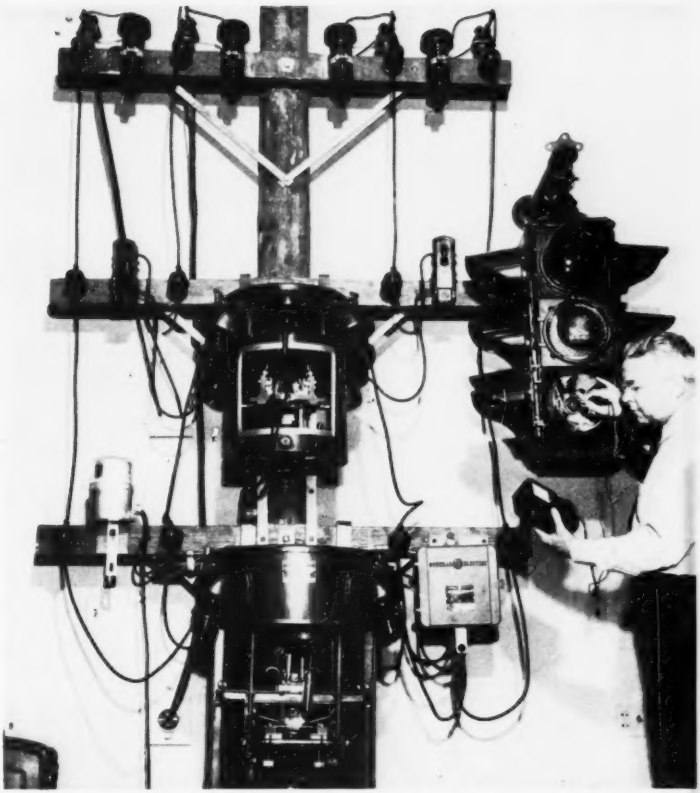
R

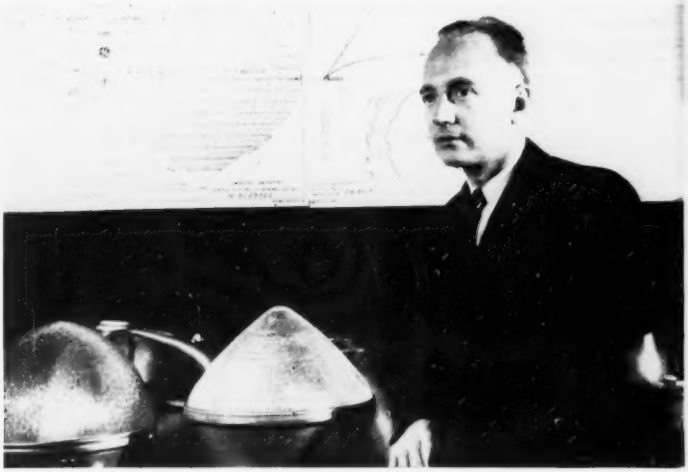
Facilities



m and set degree scale on goniometer, an instru-
f floodlights, which now are in great demand



TRAFFIC SIGNAL in display room is checked. Devices hanging on pole are control and protective equipment used in series street-lighting circuits. Room also displays other units made at plant



F. D. CROWTHER, manager of sales for Lighting and Rectifier Divisions, poses in front of isolux and isocandle curves. These diagrams were devised to illustrate performance of street lights

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

"so far as I am concerned, the 'CSP' is the only transformer"

What backs up this statement by the manager of a southern co-operative, about the "CSP"* Completely Self-Protecting transformer?

In August, 1947, the most severe wind and lightning storm in his long experience lashed the area served by his company. Five breaks in the line were reported, plus two breaks in the neutral. Service trucks were rushed out—and, naturally, they carried replacement transformers.

But not one "CSP" transformer had failed!

This striking proof of the lightning protection built into "CSP" transformers is one reason why 1,050 transformers in the 520 miles of line in this system are "CSP" units. And why only 50 are conventional type.

One thing is sure: the built-in lightning protection of "CSP" transformers lowers maintenance costs. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70525-A

**Trademark—Reg. U. S. Pat. Off.*

HERE'S PROOF FROM U. S. A.—Thirty case histories of Completely Self-Protecting transformers, with names, dates, places, facts and figures. Get your copy of B-4248.

Call the Westinghouse Salesman

Westinghouse "CSP" TRANSFORMERS

SINGLE PHASE THREE PHASE BANKED SECONDARY

Output Moves Upward; Margin over '48 Widens

The margin between output in 1949 and that in 1948 widened during the week ended Aug. 13, 1949, when the percent change from the corresponding week of 1948, ended on Aug. 14, amounted to a 4.0 increase. This compares with a 2.8% increase for the preceding week.

Edison Electric Institute reports that the amount of electrical energy distributed during the week totaled 5,530,090,000 kwhr, comparing with 5,317,724,000 kwhr last year. During the preceding week the amount of electrical energy distributed amounted to 5,466,004,000 kwhr.

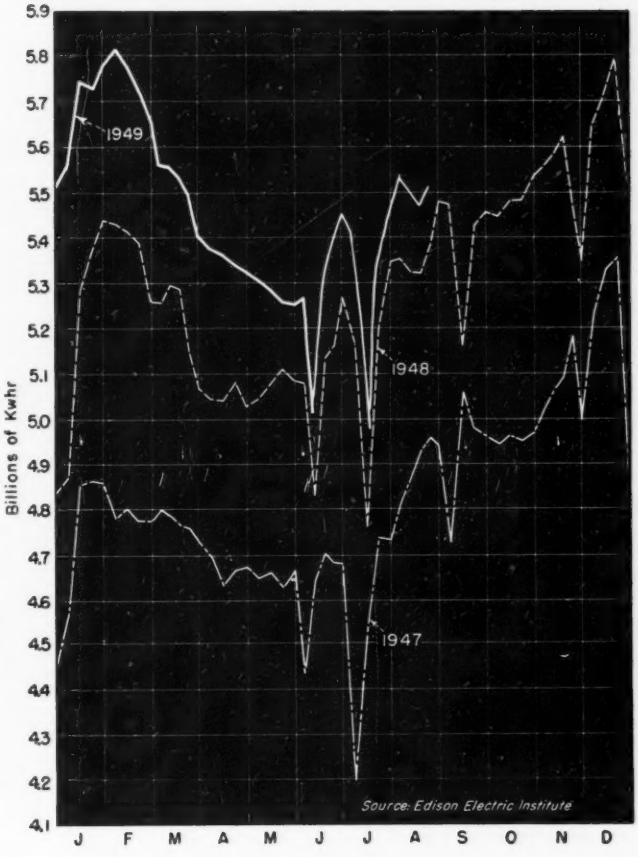
All the geographical divisions showed an increase with the exception of the Central Industrial States, which reported a decrease, 0.1%.

Weekly Output, Millions Kwhr

1949	1948	1947
Aug. 13 5,530	Aug. 14 5,318	Aug. 16 4,923
Aug. 6 5,466	Aug. 7 5,319	Aug. 9 4,874
July 30 5,518	July 31 5,352	Aug. 2 4,806
July 23 5,462	July 24 5,347	July 26 4,730
July 16 5,342	July 17 5,197	July 19 4,732
July 9 5,982	July 10 4,760	July 12 4,531
July 2 5,410	July 3 5,166	July 5 4,190
June 25 5,466	June 26 5,257	June 28 4,675
June 18 5,373	June 19 5,159	June 21 4,676
June 11 5,300	June 12 5,132	June 14 4,702
June 4 5,018	June 5 4,845	June 7 4,635
May 28 5,270	May 29 5,076	May 31 4,429

Percent Change from Previous Year

	Aug. 13	Aug. 6	July 30
New England	+ 5.3	+ 4.0	+ 3.1
Mid-Atlantic	+ 1.4	— 1.6	— 0.0
Central Industrial	— 0.1	— 1.7	+ 0.3
West Central	+ 6.9	+ 3.2	+ 4.3
Southeast	+ 5.8	+ 6.3	+ 4.7
South Central	+ 3.7	+ 5.3	+ 5.1
Rocky Mountain	+13.3	+11.9	+10.1
Pacific Coast	+ 8.1	+ 7.6	+ 6.7
Total United States	+ 4.0	+ 2.8	+ 3.1



Sales of Energy in May Advanced 3.9% over '48

Sales of electric energy to ultimate customers in May totaled 19,914,218,000 kwhr. Edison Electric Institute reports. This was a 3.9% increase over the 19,162,732,000 kwhr sold in May, 1948.

Revenues from ultimate customers amounted to $368,577,900 in May, an increase of 7.8% over the $341,931,600 reported for May, 1948.

For the 12 months ended May 31, the average use per residential customer increased to 1,616 kwhr, a 7.9% increase from the 1,498 kwhr of the previous year; the average annual bill to $48.16 from $45.55, an increase of 5.7%. Revenue per kilowatt hour decreased to 2.98c from 3.04c, a decline of 2%.

Classification of Sales, May

Kilowatthour Sales May	Million Kwhr 1949	1948	Percent Change
Residential or domestic	4,464	3,913	+14.1
Rural (Distinct rural rates)	627	452	+38.7
Commercial or industrial			
Small light and power	3,611	3,382	+ 6.7
Large light and power	9,967	10,134	— 1.6
Street & highway lighting	190	176	+ 8.3
Other public authorities	510	504	+ 1.2
Railways and railroads			
Street and interurban	296	327	— 9.3
Electrified steam railroads	202	220	— 8.0
Interdepartmental	46	55	—16.1
Total to ult cust	19,914	19,163	+ 3.9

Fluorescent Street Lights

A fluorescent street light has been developed by General Electric Co for public demonstrational use by electric power companies and municipalities. The new light is a cigar-shaped aluminum tube in which two pairs of 8-ft-long fluorescent lamps are mounted. Two long, highly polished reflectors, mounted back to back, direct the light from the lamps through clear plastic windows to the street pavement.

Electric Energy Output Sets New June Record

Production of energy by electric utilities during June totaled 23,617,424,000 kwhr, the highest June production total of record, the Federal Power Commission reports. The total was 4% over last year's and 1.2% above the 23,348,224,000 kwhr produced during May 1949.

Water power plants produced 7,224,306,000 kwhr in June, this total representing a 4.2% increase over June 1948.

Industrial production, including generation by railway and railroad plants, was 4,107,090,000 kwhr in June, a decrease of 1.5% from June 1948. This is the first monthly decrease on a year-to-year comparison since July, 1946.

Combined utility and industrial production during June was 3.1% above the similar month of last year, according to the report.

IN THE INDUSTRY

FISCHER BLACK

ESTIMATING LOAD GROWTH is at best a very non-exact science. With the national economy gyrating in many directions, the utility executives might well lose faith in the future outlook. In spite of this there has been substantial consistency in load predictions for 1949. Last fall the industry estimated a peak of 57 million kw for December 1949. In May this had been reduced to only 56 million kw.

As reported by Walker Cisler at the annual EEI meeting the estimated growth in energy production for 1949 was 8.3% and a peak load increase of 9%. Obviously, production has not reached the estimates for the first half of 1949. The average is probably nearer 6% than 8%. Even with a rapid recovery in industrial activity the prediction would hardly be reached.

Energy and peak are two different things. It is easily conceivable that the 9% increase in peak may even be exceeded. Right now growth in peaks are substantially above energy. The rate of industrial activity will likely be high in December: so sights should not be lowered during this intermediate period.

It is always inaccurate to talk of averages for the country as a whole. Even with a correct estimate for the country as a whole, individual companies find themselves way off their original estimates. Some are as much as 10% under original budget figures. Others ran 4% or 5% under for the spring months and came back in June and July with an excess. Reports on energy production from the utilities run something like this: 3% less than estimate; increase running 12%; underestimated 7% in March but only 2% in June; predicted 12% increase getting 11%; under 3% in April, over by 4% in June; recovering from downward tendency; March 2.4% under, June 2.8% over; same as estimate.

The only areas that seem to be slow in showing recovery signs are the Middle Eastern and East Central. Even here the signs are spotty, and a clear pattern is not evident.

Taking all figures into consideration it appears that the overall estimates for the year are a practical certainty except perhaps in total output. This means that some areas are going to run substantially ahead of the earlier estimates with others somewhat behind. But compared with the depressing appearance of the estimates this spring, the whole picture has turned around.

Six month financial statements show even a better picture. New England, showing up poorest in production, is strong in net. This is, of course, due in part to the small effect of industrial sales upon earnings. Central Industrial area companies are also in plus column. When everything is added up, it appears that the new plant has been well covered for the first half. The rate increases seem to have provided very nearly the exact amount required for financial requirements. Here again we see a fine job of estimating industry needs.

So in spite of the inexactness of this matter of predicting the future, the utilities have a good record. Such a record should instill even more confidence in future dealings with public bodies.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Rectifiers on industrial circuits may require loading resistors and control if the load is regenerative, eg, cranes, hoists, car dumpers.

Cyclone furnaces promise well except for the few coals for which the ash refuses to become fluid and cannot be tapped on a continuous basis.

Heliarc welding has rendered use of aluminum bus less debatable, particularly where numerous taps and connections are involved. The technique calls for special training of the welders.

Freezing of coal can be fairly well averted by admixing something like 3 lb of calcium chloride per ton, but corrosion is apparently intensified.

Transmission towers of concrete-filled tubes require fewer bracing members because much longer compression members are feasible. Steel can total 35% less, line cost 15–20% less.

Bushing flange bolts should each be loosened a little at a time and tightened the same way if excessive breakage of porcelain is not to be expected.

Tungsten lamp efficiency increase, better light distribution and glare reduction are promised by coating the inside of the bulbs with silica-sal.

Fuel economy in automotive vehicles will be 40% better with the 12/1 compression ratio using high octane fuels. That defers into the farther future the prospect of gas turbines for automobile propulsion.

Polyethylene-insulated primaries have been installed recently in ducts under the sidewalk by one company. Others use polyvinyl-chloride over lead for runs on poles.

Superheat control is possible by recirculation of combustion gases from the economizer back into the furnace at lower loads; radiating temperature is lowered, furnace absorption decreased, the super-heater getting a larger share of the released heat.

MANUFACTURERS and MARKETS

SNEAK PREVIEW of the four new transformer sizes that Pennsylvania Transformer Co has added to its line of Pole Star distribution transformers brought together H. Dornbush, left, J. E. Murray, and W. E. Kerr, of the company; D. B. Perrin, Duquesne Light Co; J. S. Maloy, West Penn Power Co; W. R. Swoish, of the company; R. C. McKees, West Penn Power; A. L. Horelick and R. F. Young, of the company. New 37½, 50, 75, and 100-kva sizes are between 35 and 50% smaller than old designs and much lighter in weight

Judges for GE-Sponsored Lighting Contest Named

Judges have been announced for the $21,000 nationwide lighting competition being sponsored by General Electric's Lamp Department in connection with the electrical industry's Planned Lighting Program.

Selection of the 24 winning installations in the commercial and industrial lighting classification will be made by the following: Chairman, Berlon C. Cooper, Lighting Consultant, ELECTRICAL WORLD, New York; J. Byers Hays, architect, Conrad, Hays, Simpson and Ruth, Cleveland and E. M. Strong, professor, School of Electrical Engineering, Cornell University, Ithaca, N. Y. J. M. Ketch, illuminating engineer, GE Lamp Department, will serve as technical advisor for these judges.

The 12 winners of residential lighting awards will be selected by the following judges: Chairman, Caroline E. Horn, Electrical Testing Laboratory, New York; Gladys Miller, interior designer, New York; Gladys A. Branegan, director, School of Home Economics, College of Agriculture, Ohio State University, Columbus; Thomas S. Kelly, lighting consultant, New York. Eugene W. Commery, head of residential lighting section, GE Lamp Department, will be the technical advisor for the residential award judges.

Awards of $100 each will be made to individuals who have played key roles in planning, selling, supplying and installing the lighting for the 36 outstanding Planned Lighting installations of 1949 in which GE lamps are predominantly used. Additional awards of $150 each will go to persons submitting reports of winning installations.

The awards will be based on reports submitted to GE and postmarked not later than Jan 31, 1950.

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3 Aluminum Plants Sold to Permanente by WAA

Henry J. Kaiser's Permanente Metals Corp has bought three government-owned aluminum plants from War Assets Administration for $36 million.

Two of the plants, with a combined annual production capacity of more than 500 million lb of aluminum, are in Spokane, Wash. The Mead aluminum reduction plant cost the government $24 million and the Trentwood rolling mill $47 million. The third plant, in Baton Rouge, La., is capable of producing 500,000 tons of alumina annually from bauxite ore and originally cost $20 million.

The sale price represents 80% of the fair value placed on the properties by the government. Permanente will pay 5% of the $36 million in cash, and the government will take a 25-year 4% mortgage on the plants for the balance.

MANUFACTURING BRIEFS

Construction work is going forward on schedule at the new wire, rod, and cable mill at the Vancouver, Wash., works of the Aluminum Co of America. On completion of the mill, the Vancouver Alcoa plant will enter the fabrication field for the first time and will add a fabricating division to its organization. Operation of the new plant will start next winter. C. S. Thayer, present works manager, becomes manager of the company's entire Vancouver operations.

The engineer's contribution toward the creation of better living conditions and a more enjoyable life is dramatically shown in a new 16-mm sound film in color, "The Hidden World," released by Allis-Chalmers.

A robot "announcer," on duty 24 hours a day, is keeping management employees of the Westinghouse Electric Corp, East Pittsburgh, right up to the minute on company news. By dialing a special number on their in-plant telephones supervisory employees can listen in while a continuous tape reels off the latest developments.

"Welding Notes for Engineers" has appeared in new format. Originally designed to help the welding engineer solve some of his typical problems, in-

creasing requests have required expansion and a new physical form. The bulletin is issued twice a month by Eutectic Welding Alloys Corp, New York.

Nationwide promotion, which culminates this month with the award of a complete kitchen and laundry, has been launched by GE in cooperation with the American Legion National Convention Corp. The GE kitchen, complete with television receiver and fully automatic laundry, will be awarded at the Legion's national convention in Philadelphia to a woman who is either a member of the organization or a relative of a Legionnaire.

Now that Anglo-American unification of screw threads has been achieved, engineers have set their sights on the screw thread systems of other nations. The International Organization for Standardization, composed of representatives of 17 countries, including the United States and Great Britain, met recently in Paris for a three-day meeting during which one of the principal items on the agenda was the setting up of a project for the unification of the various national standards on screw threads, the ASME has announced.

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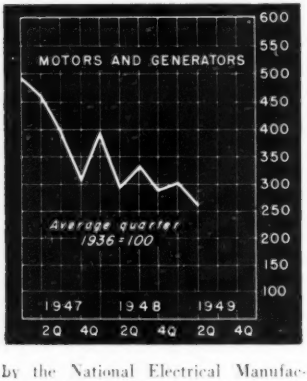
Motor-Generator Orders Decrease in 1st Quarter

Orders received for motors and generators during the first quarter of 1949 fell off sharply. The index compiled



by the National Electrical Manufacturers Association dropped from 301 in the fourth quarter of 1948 to 262 in the first quarter of this year. This was a 13% decrease. The decrease from the corresponding quarter of 1948 was 11%.

No adjustment has been made for cancellation or renegotiation of orders.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Arizona—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Yuma, synchronous motors, and exciters for Wellton-Mohawk Pumping Plants 1 and 3, Gila Proj., Spec. 2763. L. N. McClellan, ch. engr.

Arizona-Nevada—Bureau Reclamation, Aviola Bldg., Phoenix, Ariz., stringing conductor and overhead ground wire on Davis Dam-Hoover Dam and Davis Dam-Parker Dam 230-kilovolt transmission lines and installing disconnecting switches, appurtenances, electrical equip. on Davis Tap to Hoover Dam-Basic Magnesium Line, Spec. 2756. L. N. McClellan, ch. engr.

Arkansas—First Electric Co-operative Corp., Jacksonville, 500 mi. rural distr. lines, sys. imprv., Pulaski Co. **$735,000.**

California—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Herdlyn, Calif., distribution board assembly, oil purifier power board, compressor power board, misc. power board, heating and ventilating board, power distr. panel board, distr. transformers, thermostats, switches, etc., Tracy Pumping Plant; distr. board assembly heating and ventilating board, distr. transformers, Tracy Switchyard, Central Valley Proj., Spec. 2755. L. N. McClellan, ch. engr.

Idaho—Bureau Reclamation, Dpt. Interior, Anderson Dam, Anderson Ranch Dam-Mountain Home 115 kilovolt transmission lines, Boise Proj. near Mountain Home, Spec. 2762.

Ind., Butlerville—State of Indiana, P. Wks. & Supply Div., W. R. Myheck, dir., State House, Indianapolis, 1 story, 31x88 ft. and 18x41 ft. brick, rein.-con. steel power house addn., Muscatack State School, $100,000. Plans deposit $25. McGuire & Shook, 1490-91 Fletcher Trust Bldg., Indianapolis, archts. Bevington, Taggart & Fowler Inc., 730 Indiana Pythian Bldg., Indianapolis, engr.

Kansas—Northwest Kansas Electric Co-operative, Bird City, 615 mi. rural distr. lines, Cheyenne Co., **$895,000.** W. H. Burgwin, Fredonia, engr.

Kan., Anthony—City, City Hall, power plant imprvs., incl. bldg. addn., turbo generator, condenser, fed water heater, piping, wiring, etc. **$70,000.** Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

Minn., Minneapolis—University of Minnesota, R. S. Callaway, purch. agt., 322 Admin. Bldg., Main Campus, atom smasher, **$728,000.**

Mississippi—Coast Electric Power Assn., Bay St. Louis, 85 mi. rural distr. lines, sys. imprvs., Proj. Mississippi 28, Hancock Co. **$350,000.** Pepper & Mathews, Yazoo City, consult. engrs.

Mo., Poplar Bluff—M. & A. Electric Power Co-operative, Poplar Bluff, Sect. 2, wells, Sect. 3 bldg., Sect. 4, electrical work for diesel generating plant, Stanley Eng. Co., Hershey Bldg., Muscatine, Ia., engrs.

Montana—Tongue River Electric Co-operative, Inc., Terry, 85 mi. rural distr. lines, sys. imprvs., Custer Co. **$126,000.**

New Mexico—U. S. Eng., P. O. Box 1538, Albuquerque, converting from gas to fuel oil and electricity, Conchas Dam and Reservoir Proj. on State Hy. 129, 20 mi. north of Newkirk, San Miguel Co., Serial No. CIVENG-29-005-59-2. Bids 6/27 rejected.

North Dakota — Bureau Reclamation, Dpt. Interior, Bismarck, one 1,500 kva and one 15 kva transformers, three 15,000 volt circuit breakers, one 69,000 volt disconnecting switch, one set 15,000 volt disconnecting and by-pass switches, three 69,000 volt disconnecting fuses, one 7,500 volt fuse cutout, one hookstick and fuse remover, 18 current and 3 potential transformers, 1watthour meter, one portable recording volt-meter for DeVaul substation, Spec. R6-BIS-16 (Region 6), Missouri River Basin Proj.

South Carolina—Fairfield Electric Co-operative, Inc., Winnsboro, 91 mi. rural distr. line and sys. imprvs., Fairfield Co. **$275,000.**

Tenn., Johnson City—City, c/o mayor, Johnson City, electric sys. imprvs. **$115,000.**

Texas—Concho Valley Electric Co-operative, Inc., San Angelo, 164 mi. rural distr. lines and sys. imprvs., Tom Green Co. **$285,000.**

Washington—Benton Rural Electric Assoc., Inc., Prosser, 80 mi. rural distr. line and sys. imprvs., Benton Co. **$375,000.**

Wyoming-Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., installing overhead ground wires on Cheyenne-Treeley 115-kilovolt transmission line, Spec. 2758. L. N. McClellan, ch. engr.

Low Bidders & Contracts Awarded

Ill., Quincy—State Div. Architecture & Engrg., Capitol Bldg., Springfield, power piping, tanks, heaters, pumps and accessory equip., also coal and ash handling equip., for power plant alterations, Illinois Sailors and Soldiers Home, to St., Chicago, **$279,293** and **$69,088** respectively.

Ia., Ames—City, City Hall, July 25, power wiring, Contr. 19, power plant imprvs., from Commonwealth Electric Co., 1901 Y St., Lincoln, Neb., **$78,450.**

Pa., Aspinwall—Aspinwall Boro, Boro Bldg., light plant imprvs., remodeling disposal present boiler room and generating room equip., installing diesel power plant, to Worthington Pump & Machine Co., Koppers Bldg., Pittsburgh. **$239,950.**

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Colo., Rifle and Newcastle—Columbine Development Co., Preston Walker, genl. mgr., Grand Junction, paper mill, **$15,000,000.**

D. C., Wash.—Comm. on Renovation of the Executive Mansion c/o Senator Kenneth McKellar, chn., Senate Office Bldg., Wash., 25, D. C., plans repairing, remodeling White House, **$5,400,000** ($2,000,000 appropriated) William D. Delano, 126 E. 38 St., New York, N. Y., consult. archt. E. H. Praeger, c/o Madigan-Hyland, 28-04 41 Ave., Long Island City, N. Y., and E. E. Howard, c/o Howard, Needles, Tammen & Bergendorff, 291 Walnut St., Kansas City, Mo., consult. engrs.

Md., Bethesda—Federal Wks. Admin., P. Bldgs. Admin., F St. between 18 and 19 N. W., Wash. 25, D. C., Clinical-Center Bldg. 10, at National Institute of Health, Proj. 18-063. **$18,000,000-$20,000,000.**

Mo., St. Louis—St. Louis Housing Auth., Arthur A. Blumeyer, chn., Civil Courts Bldg., 12 and Market St., Zone 1, plans by George F. Hellmuth, Jr., 5568 Maryland Ave., Zone 5, twelve 6 to 12 story bldgs., incl. 1,000 units, in area bounded by 8 and 9, Biddle and Carr Sts. **$5,600,000-$7,000,000.**

Tex., Houston—Harris Co., Glenn Perry, judge, Courthouse, courthouse, $6,000,000. Finger & Rustay, 711 National Standard Bldg., archts.

Utah, Marysvale—Green River Exploration Co., Salt Lake City, uranium-ore mill. Approx. **$10,000,000.**

Modern Deadending

PUTS SAFETY FACTORS WHERE THEY COUNT

Mechanically and electrically STRONG, this six-inch O-B suspension insulator is the basis for today's most modern deadending practice on urban distribution lines. Make-up with an O-B Universal Strain Clamp produces a dead-end with a 10,000-pound ultimate; 60-cycle flashover of 60,000 volts, dry, and 30,000 volts, wet; and an electrical leakage distance of 7 inches--putting big safety factors where they count!

Six-inch O-B suspension units are now available for current requirements, and may be obtained from over 100 locally-maintained Graybar warehouses. This adds convenience to all the other advantages of this modern deadend--convenience of delivery to the job at regular LCL prices, plus the economy of not having to maintain a private inventory.

Build your deadends the modern way with six-inch O-B suspension insulators. Buy them the modern way and save money, through your local Graybar representative.

Ohio Brass

2941-H MANSFIELD, OHIO

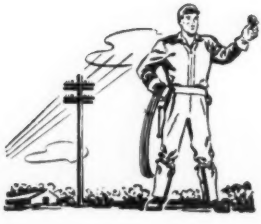
Now here's a Connector!!!

It's a Servit. We might call it a split-bolt, a "bug" or even a BURNDY. Mister, I call it a *real* connector.

I can't begin to remember how many thousands I've used. One thing sure—they make my job easier.

If I'm making a tap or a service connection just give me a SERVIT and a wrench.

If you're a "Doubting Thomas" try them . . . see for yourself how SERVITS save and serve!



Connect with

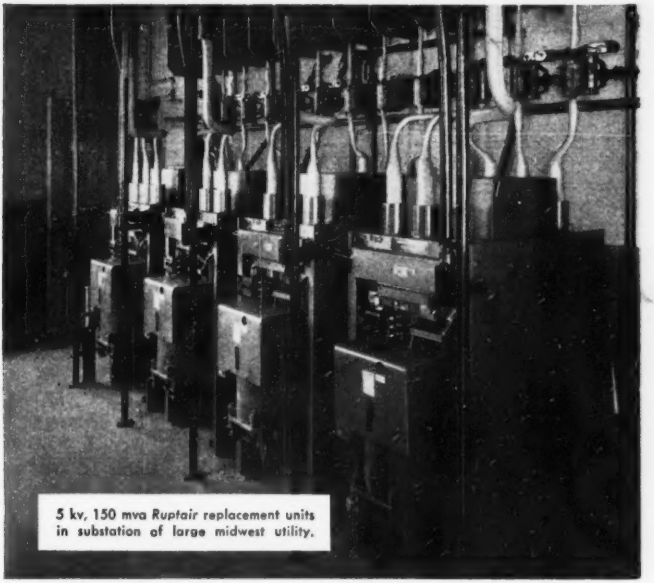
BURNDY

New York 54, N. Y.

WESTERN BRANCH: Vernon 11, California

CANADA: Canadian Line Materials, Ltd., Toronto 13

Introducing... RUPTAIR REPLACEMENT UNITS!

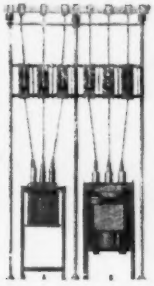


5 kv, 150 mva *Ruptair* replacement units in substation of large midwest utility.

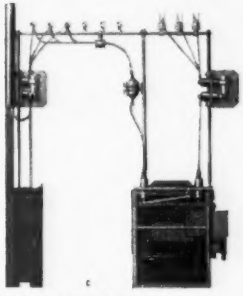
Typical Modernization Application:

You salvage everything but the obsolete breaker when you install *Ruptair* replacement units. New current transformers, disconnect switches, or buses are usually unnecessary.

A.) Typical open type iron pipe framework used with oil type circuit breaker and other switchgear components.



B.) New *Ruptair* unit replaces obsolete circuit breakers without disturbing buses, disconnect switches, instrument transformers.



C.) Side view of installation B.

IMPROVE CIRCUIT PROTECTION
REDUCE MAINTENANCE
MODERNIZE INADEQUATE FACILITIES

NOW YOU CAN REPLACE obsolete, worn out, low capacity oil breakers with *modern Ruptair* circuit breakers. These Vertical-lift Replacement Units are the logical way to get reliable protection with minimum expense, installation time and station modification.

Utilities can increase station interrupting capacity, meet modern power distribution requirements with these new units.

The Vertical-lift *Ruptair* circuit breaker is oilless, reduces fire hazard, requires little maintenance. Attached wheels make possible inspection and maintenance remote from the unit.

Unit is easily installed in existing concrete or masonry cells or in open-type iron pipe framework. Comparative low height makes it applicable to small existing structures. Vertical-lift design simplifies connection of bushings to existing bus or cable at minimum cost.

Voltage ratings 2300 and 4160 volts, interrupting capacities 100, 150, 250 mva. Current capacities 1200 and 2000 amperes, a-c or d-c solenoid operation.

Call your A-C sales office or write direct for new Bulletin 18B7094.

Ruptair is an Allis-Chalmers trademark.

ALLIS-CHALMERS

First in the U. S. with Metal-Clad Switchgear

ALLIS-CHALMERS, 932A SO. 70 ST. MILWAUKEE, WIS.

Please send new bulletin 1887094 on *Ruptair* replacement unit.

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Company _____

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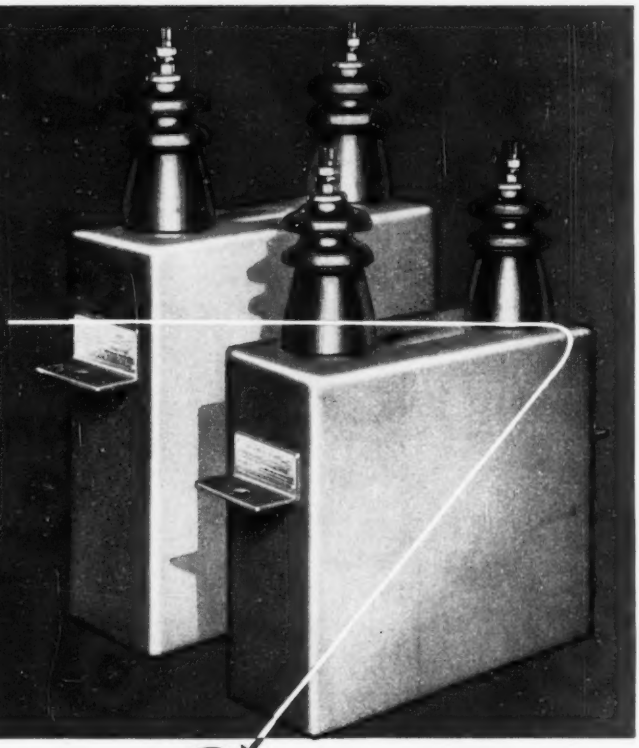
SOLVE YOUR LOW POWER FACTOR PROBLEMS



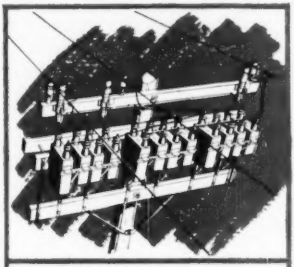
with MOLONEY *Capacitors*

Reduce reactive Kva by using shunt capacitor installations and increase your distribution system's ability to handle "pay" load. Proper use of capacitors will release generator, transformer and feeder line capacity that is now tied up with non-revenue producing reactive Kva. Further dividends are provided by capacitors in lowered line losses and decreased line voltage drop.

Moloney Capacitors are designed to give long, trouble-free service. They are built to the same high standard of quality that is characteristic of Moloney Transformers.

MOLONEY CAPACITOR FEATURES

- ★ Long life through high impulse strength and low unit voltage stress.
- ★ Copper-bearing steel cases—welded construction (16 gauge). Domed top to shed water.
- ★ Hermetically sealed to prevent entrance of moisture. Tanks are pressure tested for leaks.
- ★ Vacuum treated under elevated temperature to remove moisture and air. Then they are impregnated and filled with non-inflammable Askarel liquid. Suitable for outdoor or indoor installation.
- ★ Solderless type terminals arranged to take two conductors ranging from No. 8 solid to No. 2 stranded, permitting convenient connection in banks.



Capacitors provide the quickest and most economical means of relieving system overloads and improving voltage conditions where low power factor loads prevail. Capacitors may be obtained from stock, and installed costs are low... less than $10 per Kvar.

MOLONEY ELECTRIC COMPANY

Sales offices in all principal cities

FACTORIES AT ST. LOUIS 20, MO., AND TORONTO, ONTARIO, CANADA

NEWS ABOUT PEOPLE

Branch Named Manager, V-P of Georgia Power Co

Harllee Branch, Jr, member of the Atlanta law firm of MacDougald, Troutman, Sams & Branch, has been

HARLLEE BRANCH, JR.

elected vice-president and general manager of Georgia Power Co to fill a position vacant since 1945. He also was named to the board of directors, succeeding Granville H. Bourne, vice-president of the Southern Co.

Branch has handled legal matters for the utility since 1931, when he joined the law firm, headed by Dan MacDougald, chairman of Georgia Power. Born in Atlanta June 21, 1906, Branch is a graduate of Davidson College and Emory University. He is a former president of the Atlanta Bar Association.

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Ralph E. Gale, general sales manager of Idaho Power Co since 1936, has been named assistant to the president of the company.

P. T. Baird, formerly superintendent of the Norfolk district of the Consumers Public Power District in Nebraska, has been appointed to the newly created position of assistant general superintendent of the state-wide system, with headquarters at Lincoln.

C. W. Kenney, construction engineer for the West Penn Power Co, Pittsburgh, has retired after more than 43 years of service. He has been responsible for the many civil engineering projects in the company's system.

Gordon B. Hoffman has been promoted to the position of company civil engineer, in which he will be responsible for the civil engineering design of all construction projects for the company's power and operating departments.

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Goddard to Head IES; Promoted by Sylvania

(See Front Cover)

Charles H. Goddard, Sylvania Electric Products, Inc, has been elected president of the Illuminating Engineering Society. He will take office Oct 1.

His promotion to manager of utility sales from general manager of the lighting fixture division was announced last week by Sylvania. In his new position, he will be in charge of sales of all lighting equipment to municipalities, railroads and other transportation companies, central station sales, and large industry accounts.

Before joining Sylvania in 1944, Goddard was vice-president of Pittsburgh Reflector Co for whom he had worked 14 years.

He has been an active member of IES since 1934 and has been treasurer and for two terms, vice-president.

Other IES officers who will take office Oct 1 are S. G. Hibben, Westinghouse Electric Corp, vice-president; E. M. Strong, Cornell University, treasurer; A. H. Manwaring, Philadelphia Electrical & Manufacturing Co, general secretary.

The new regional vice-presidents are J. B. Browder, Georgia Power Co, Southern Region; G. F. Dean, Toronto Hydro-Electric System, Canadian Region; F. A. Covington, San Antonio (Tex.) Public Service Board, Southwestern Region; J. S. Schuchert, Duquesne Light Co, Pittsburgh, East Central Region.

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William F. Uhl, president, Chas. T. Main, Inc, Boston consulting engineering firm, has been awarded an honorary degree of doctor of engineering by Tufts College.

Karsten, Kimball Picked for Kansas G & E Posts

Edgar J. Karsten has been appointed chief engineer and Fred M. Kimball, general sales manager of Kansas Gas & Electric Co.

Karsten will be in charge of the en-

EDGAR J. KARSTEN

gineering department, which handles planning and design of electrical construction and reconstruction work for the KG&E system. He comes to Wichita

FRED M. KIMBALL

from Davenport, Ia., where he has been supervising electrical engineer for the United Light & Railways Co properties. Earlier he had experience in both construction and operation of electrical properties.

A graduate of the State University

of Iowa, Karsten also had studied at Lafayette Institute of Los Angeles; Lathrup Polytechnic Institute of Kansas City, Mo.; and the University of Illinois. He is a member of Edison Electric Institute's Electric Equipment Committee.

Appointment of Kimball, who has been sales promotion manager of Portland Gas & Coke Co, will mark the beginning of an expanded sales program by the utility. He started to work for Kansas Electric Power Co in Leavenworth, Kan., as an appliance salesman in 1929, later becoming division new business manager, division commercial manager, and assistant general commercial manager. In 1939 he was transferred to Missouri Public Service Corp at Warrensburg as general commercial manager.

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Ohio Power Consolidation Brings Personnel Shifts

Several personnel changes have resulted from consolidation of Ohio Power Co's Canton and Service (Coshocton) Divisions into a new Central Division with headquarters in Canton.

R. C. Knapp, Canton Division manager, has been appointed manager of the Central Division, with T. E. With, service division manager, as assistant manager. William J. Stewart was named superintendent of the central division. He is succeeded as Waynesburg district manager by Fred M. Zimmer, Canton division distribution superintendent.

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Lane D. Webber, vice-president of Southern California Edison Co. has been made head of the company's public relations department. **W. C. McWhinney,** assistant vice-president, will be associated with him.

Charles H. Mitchell, vice-president and manager of works of the Canadian Westinghouse Co, has retired after 50 years of service. Mr Mitchell is an outstanding figure in the Canadian electrical manufacturing industry.

A. F. Black, Jr, assistant superintendent of the utilities department at Martinsville, Va., has been appointed superintendent of the department to succeed **John H. Pharis,** who has been appointed assistant city manager. Mr Black had been assistant superintendent for the past two years. Mr Pharis has been a city employee for more than 25 years.

Van Vleet Manufacturing Head for Line Material

John N. Van Vleet has been appointed to fill the newly created post of vice-president in charge of manufacturing for Line Material Co's eight plants in the United States. He will control and coordinate all production operations, including industrial engineering, plant engineering, and all phases of manufacturing.

JOHN N. VAN VLEET

Van Vleet joined the old Kyle Co in 1942 and was named Line Material divisional vice-president in charge of the Kyle Co division after merger of the two companies in 1947. A 1936 graduate of the University of Wisconsin, he spent several years as a lubricating engineer for Shell Oil Co.

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W. J. Rose, with American Gas & Electric Service Corp of New York since 1938, has been elected secretary of AG&E. He entered the public utility industry in 1930, in the financial and treasury departments of Central Public Service Corp, Chicago. Later he worked for Stone & Webster Service Corp and Stone & Webster & Blodget, Inc.

R. L. Phillips has been made general superintendent of power in charge of Louisiana Power & Light Co's Sterlington and new Ninemile Point generating plants. **John R. Horton,** station chief at Sterlington, will be plant superintendent at Ninemile, and **Carl D. Brooks** will succeed Horton at Sterlington.

Roy Martindale, assistant chief electrical engineer in the Los Angeles Department of Water and Power since 1944, has retired. He had been with the department over 37 years, beginning as a draftsman in 1911. Mr Martindale had been the department's representative on the California Power Interchange Committee, and was head of the power division from 1944 to 1946. Since the latter date he had been conducting studies on the California river problem, as assistant to Charles P. Garman, chief electrical engineer.

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Largest Division Divided by New York State E&G

New York State Electric & Gas Co has split its Binghamton division, largest in the company's territory, into the Binghamton and Oneonta divisions, with Howard E. Orton as Binghamton manager and Andrew R. Ewing as Oneonta manager.

Orton, who has been manager of the Endicott-Owego district, succeeds William H. McElwain, who resigned to accept an executive position with the Metropolitan Edison Co, Reading, Pa. Ewing has been Oneonta district manager. Harold P. Allen will continue as manager of the Liberty district, moved from the Binghamton to the Oneonta division.

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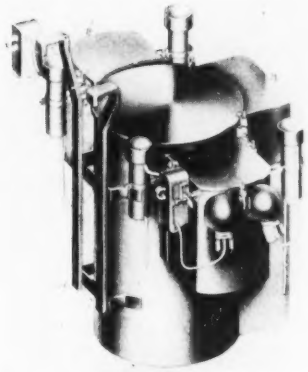
Raymond S. Talton, Carolina Power & Light Co plant engineer, has been appointed to the newly created position of production engineer. He will be responsible for general supervision of technical and engineering aspects of the utility's hydro and steam electric generating stations. A graduate of North Carolina State College, Talton joined the company in 1939 as assistant engineer in the operating department.

Robert D. Cleaves has been appointed sales manager of the protective equipment division of the Line Material Co, Milwaukee. He was formerly manager of the company's Des Moines branch and central Iowa field representative. Mr Cleaves joined L-M in 1941 as transformer sales engineer. He was transferred to the Des Moines area three years later. Mr Cleaves will be located at the South Milwaukee plant.

Brig Gen Thomas C. Rives, USAF retired, has been appointed research professor of electrical engineering at the University of Illinois. Rives retired from the Army Air Force June 30, after serving since 1920. Since 1945 he had been chief of the electronics subdivision, engineering division, Air Materiel Command. He holds degrees from Alabama Polytechnic Institute and Sheffield Scientific School, Yale University.

NEW EQUIPMENT



Outdoor Regulator

FEATURING COMPLETE factory-wired component parts, an outdoor substation-type constant-current regulator for street lighting has been announced by the Lighting and Rectifier Divisions of General Electric Co, Schenectady 5, N. Y. Available in ratings of 20, 25, and 30-kw, the regulator may be bolted to pole or platform.

Unit consists of moving coil constant-current transformer, capacitors mounted in separate air tank, standard controller mechanism, open circuit protector, porcelain primary fuse cutouts, pellet type arresters and supporting hangers. Additional information is contained in Bulletin GEA-5374.

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Truck Body

FOR LIGHT DUTY line construction and maintenance work, Series 400 all-steel body is built by McCabe-Powers Auto Body Co, 5900 N. Broadway, St. Louis, Mo. Adequate storage facilities for tools and materials are provided.

Equipped with a light duty winch and pole derrick, unit is claimed to be capable of erecting poles up to 40 ft in length. It is available in 90 in. and 108 in. lengths for installation on chassis with a back of cab to centerline of rear axle dimension of 48 in. and 60 in., respectively.

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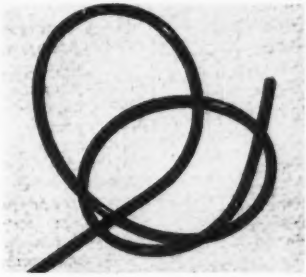

Fiberglas Insulation

TO GIVE dependable dielectric strength at lower cost, a braided Fiberglas tubing and sleeving insulation, BH 649, has been announced by Bentley, Harris Mfg Co, Conshohocken, Pa. It is claimed to withstand knotting, twisting or direct flame without sign of insulation breakdown; also potting temperatures of 450 F up to 60 min and exposure to 220 F for 96 hr with little physical change or loss of dielectric strength.

Megohm resistance is 50,000 when dry, 10,000 when wet. Sizes range from No. 20 to $\frac{5}{8}$ in. inclusive. Colors available include standard black and yellow, as well as red, green and brown.

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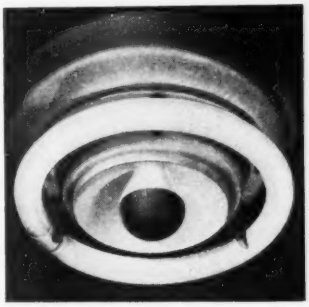
Solenoid Valves

A LINE of bronze body solenoid valves, designed for use with petroleum oils, water, air and inert gases with operating pressures from 20 to 150 psi, is manufactured by Skinner Electric Valve Division, Norwalk, Conn. Designated Series M-3, these normally open or closed and directional flow types are available with $\frac{3}{8}$-in. orifice and $\frac{3}{8}$ or $\frac{1}{2}$-in. NPT ports.

Valves may be mounted in any position and may be used for continuous or intermittent duty. Maximum power consumption is 10 w. Bulletin No. 493 describes Series M-3 valves in detail.



All-Purpose Fixture

PROVIDING a combination fluorescent-incandescent lighting fixture, primarily for kitchen use but adaptable to a variety of residential and commercial lighting uses, the Dualite has been announced by Guardian Light Co, 301 Lake St, Oak Park, Ill.

Fixture uses standard 12-in. diam 32-w Circline fluorescent lamp in combination with a 100-w silver bowl incandescent lamp. Illumination is furnished indirectly from the high-gloss reflecting surface.

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Oscillator

FEATURING a unique circuit which is said to have no lower frequency limit, Model M oscillator was developed by Southwestern Industrial Electronic Co, 2831 Post Oak Rd, Houston, 19, Texas.

Company reports that instrument has extremely low distortion and extremely high calibration accuracy.

Oscillator has power frequency comparitor, fixed frequency crystal plug-in units, wide frequency ranges from 1 to 120,000 cps and electronically regulated power supply.

ELECTRICAL BUSINESS OUTLOOK

BUSINESS PICK-UP is continuing. It started in soft goods trades. Consumers have kept buying heavily and many stores cut inventories too low. So orders have been picking up for the cotton and woolen mills. Production for the fall season is rising.

But metalworking lines are reviving too. Consumer durables in particular have been selling well this summer. Easier instalment credit helps. And industrial users are less worried about falling prices for metals. Lead and copper markets have apparently firmed. Now more orders are being placed with the primary producers.

This summer revival in business will help power sales in areas which felt the spring slide most. New England textile mills and brass mills in particular will be bouncing back. And in the Middle Atlantic region there should be more power demand from paper mills and metal fabricators.

Important too is the rise in the steel operating rate after hitting a July low. Steel is one of the big factors behind high industrial power sales. But the real test is still ahead of the steel industry. The steel wage contract, still being argued over, will affect steel prices and sales.

Chances for steel, and industry in general, to keep on in high gear are improving. Industry in general is managing to cut prices and maintain volume. Construction, another big steel consumer, has evidently cut prices enough to maintain heavy activity well into 1950. And with steel and construction hanging on, the outlook for another year of high level business is promising.

A look backward shows how bad the second quarter dip was in electrical manufacturing. Activity measured by the American Machinist index, dropped 11% from the first quarter level and was 4% below the second quarter of 1948. Big generators for utilities were still being turned out as fast as possible. But all the lighter lines slumped.

UTILITY PROFITS rose in the first half of 1949 while those of other industries were falling. For manufacturing and mining companies, profits in the first six months ran about 5% below 1948 levels. The comparison would have been worse if it were not for the increased earnings reported by automobile companies. Main reason: both volume and prices dropped for industry, particularly in the second quarter.

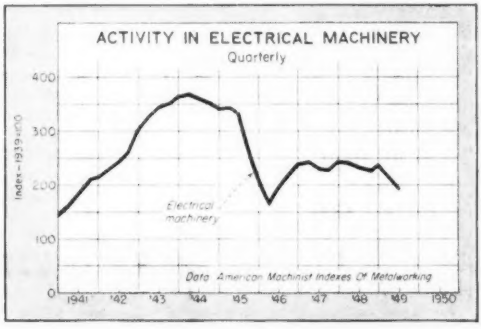
Utilities, on the other hand, sold more power than last year and did it at higher rates. Of course power rates never did climb like industrial prices. They're only now beginning to come into equilibrium. Meanwhile, fuel costs dropped 3.8% and total operating costs, 3.6%. Better water supply and cheaper coal helped drop fuel costs.

Result: operating income of Class A and B utilities was 12.8% higher for the first six months than in 1948. Net income kept in step with a 12.7% gain. And, reversing last year's showing, this gain in net income topped the increase in plant investment for the period. In the first half year, investment in plant and equipment was increased by 11.8%. So the rise in earnings meant a 5.33% average return on investment, compared with 5.23% in 1948.

UTILITY STOCKS have been rising, reflecting this favorable earnings picture, as well as confidence that more good business is ahead for the industry in 1950. The Dow-Jones utility stock averages are now close to their highest point for the past three years. This should make it easier for utilities to continue a satisfactory volume of equity financing. So far in 1949, new common stock sales have been even better than originally hoped for.

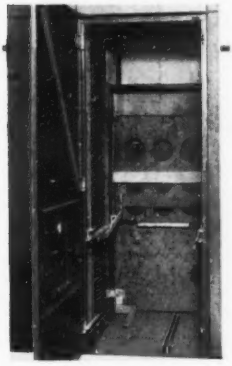
The stock market in general has been rallying since July, one of the steadiest rises in some time. The market hit its bottom near the worst of the business decline, began coming back sooner. If business continues to advance this fall, the market may go higher than it has since 1946.

Meanwhile developments continue to favor a strong bond market. The Federal Reserve Board is reported considering a further cut in bank reserve requirements. That would enable banks to keep on buying large amounts of government bonds even if commercial lending rises. And the corporate bond market has been closely tied to the government market ever since the war.

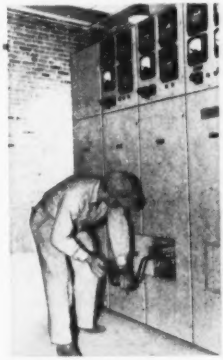


Are You *Really* Interested in Getting More for Your Money?

➡ For years, I-T-E has maintained leadership in the circuit breaker and switchgear industry. Today, I-T-E invites you to look over the special built-in features which have become a part of its "standard price" switchgear . . .



PLANNED FOR BETTER
ACCESSIBILITY



PLANNED FOR EASIER
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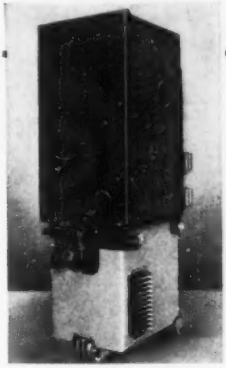
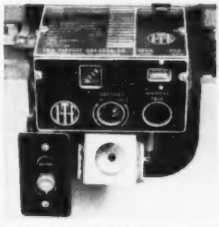


PLANNED FOR GREATER
SAFETY

METERS AND RELAYS are mounted on a *Relay Panel* designed for that specific purpose. Why?

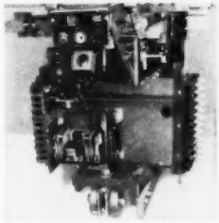
a. Delicate relay mechanisms are not subjected to "operation by vibration" when circuit breaker doors are opened or closed or bumped.

b. The Relay Compartment is just that. The secondary wiring, control bus, and relays are together, *where you want them*, not where manufacturing economy dictates.



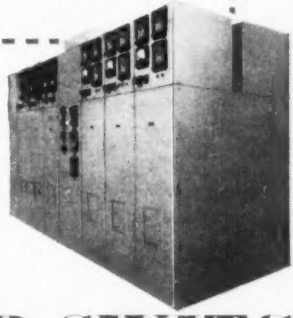
TESTING CIRCUIT BREAKER operation within the structure is no longer a chore.

a. Release a catch, move the breaker $4\frac{1}{2}$ inches, and you are ready to test. An electrical close-trip test-switch is furnished on every breaker unit. Test control circuits are automatically set up. No jumpers, no plugs, no push, no pull. Easy does it!



HIGH IMPULSE CIRCUIT BREAKERS

If you are impulse conscious you are familiar with the present interim test that permits circuit breakers of the 5KV class to be subjected to a 45KV impulse test across the open contacts. Type HV breakers are tested to withstand a 60KV impulse — phase to phase, phase to ground, and across the open contacts.



COORDINATED IN MULTUMITE BOARDS

I-T-E HV MULTUMITE Switchgear assemblies coordinate efficient I-T-E HV Air Circuit Breakers with transformers, meters, bus, and instruments into a single, efficient unit. I-T-E HV Air Circuit Breakers are rated at 5KV, 7.5KV, and 15KV — 600 A., 1200 A., and 2000 A. continuous; 50MVA, 150MVA, and 250MVA interrupting

These are but a few of our better points. There is an I-T-E Field Application Engineer in your area. Permit him to tell you of other advantages, and to assist in your switchgear planning.

POWER SWITCHGEAR

I-T-E CIRCUIT BREAKER COMPANY, 19th & Hamilton Streets, Philadelphia 30, Pa.
31 Offices in United States · In Canada, EASTERN POWER DEVICES, Ltd., TORONTO
For Export: Philips Export Corp., New York

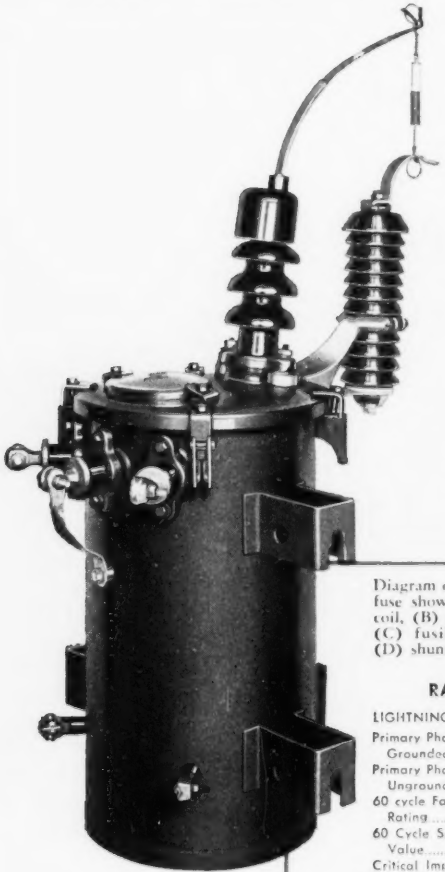
SWITCHGEAR • UNIT SUBSTATIONS • ISOLATED PHASE BUS STRUCTURES • POWER CIRCUIT BREAKERS
MECHANICAL RECTIFIERS • RESISTORS • SPECIAL PRODUCTS

R&IE

* For power switching equipment refer to Railway & Industrial Engineering, an I-T-E organization

LOW COST Protection

FOR YOUR *RURAL* TRANSFORMERS



Combination Lightning Arrester and Overload Limiter provides Complete, Low-Cost Protection on Allis-Chalmers Rural Distribution Transformers

COMPLETE PROTECTION for your rural transformers need not be economically out of reach — even on low revenue feeders.

Allis-Chalmers Rural Transformers with combination Lightning Arrester and Overhead Limiter offer as complete protection as you can buy . . . at a saving over many other types because of its simple, thrifty operating principle. By using this arrangement you can economically justify complete electrical protection for all transformers on your system.

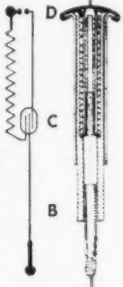
SURGE-PROOF OVERLOAD LIMITER

An important feature of this protective combination is the surge-proof overload limiter. Through special two-element fuse design, fuses rated small enough for low sustained tripping values can at the same time withstand momentary load current surges equal to ordinary fuse links rated 4 to 8 times higher! This provides protection against secondary shorts and harmful overloads, eliminates costly and unnecessary storm outages — yet permits safe, efficient utilization of Allis-Chalmers rural transformer overload capabilities.

The protected transformer comes to you completely assembled as a packaged unit, ready to install.

For further details, write for Specification 2557, or call your nearby A-C sales representative.

Diagram of two-element fuse shows (A) heater coil, (B) pull out wire, (C) fusible junction, (D) shunting gap.



RATINGS

LIGHTNING ARRESTER

Primary Phase to Phase Volts, Grounded	9000-13800
Primary Phase to Phase Volts, Ungrounded	6000-9000
60 cycle Fault Current Rating	No Limit
60 Cycle Sparkover Value	34 KV
Critical Impulse Sparkover Value (1½x40 wave)	54 KV

OVERLOAD CUTOUT

Current Rating	50 amps
Maximum Interrupting Capacity	1200 amps

A 2793

ALLIS-CHALMERS, 932A SO. 70 ST.
MILWAUKEE, WIS.

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